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WHO CHRONICLE

VOL. 13, No. 7-8 - JULY-AUGUST 1959

Twelfth World Health Assembly

The role of WHO in medical research

Environmental sanitation

Smallpox eradication

Health education of the public

WORLD HEALTH ORGANIZATION
PALAIS DES NATIONS
GENEVA

The World Health Organization (WHO) is one of the specialized agencies of the United Nations. Through this organization, which came into being in 1948, the public health and medical professions of more than 80 countries exchange their knowledge and experience, and collaborate in an effort to achieve the highest possible level of health throughout the world. WHO is not concerned with problems which individual countries or territories can solve with their own resources. It deals, rather, with problems which can only be satisfactorily solved through the co-operation of all, or certain groups of, countries—the eradication of diseases such as malaria, the control of cholera, plague, yellow fever, smallpox and rickettsiosis. Progress towards better health throughout the world also demands international co-operation in many other activities : for example, setting up standards for biological substances, for insecticides and insecticide spraying equipment ; compiling an international pharmacopoeia ; drawing up international sanitary regulations ; revising the international lists of diseases and causes of death ; assembling and disseminating epidemiological information ; recommending non-proprietary names for drugs ; and promoting the exchange of scientific knowledge. In many parts of the world, there is need for improvement in maternal and child health, nutrition nursing, mental health, environmental sanitation, public health administration, professional education and training, and health education of the public. Thus a very large share of the Organization's resources is devoted to giving assistance and advice in these fields to countries and territories whose health services are in an early state of development and which are therefore weak points in the common front against disease.

- ***WHO Chronicle***

  (formerly *Chronicle of the World Health Organization*), published by WHO for the medical and public health professions, provides a monthly record of the principal health activities undertaken in various countries with WHO assistance. It also contains summaries and detailed accounts of the other publications issued by the Organization.
  The Chronicle is published in English, French, Spanish, Russian and Chinese.

- ***Bulletin of the World Health Organization***

  contains technical articles, in English or French, contributed by physicians and scientists engaged in public health work. It appears monthly and each issue runs to about 200 pages.

- ***World Health***

  an illustrated magazine for the general public, aims at giving an idea of WHO activities throughout the world and at showing some of the more striking aspects of public health work.
  This publication appears every two months in English, French, Spanish and Portuguese.

Other WHO publications: the *Technical Report Series*, the *Monograph Series*, the *Epidemiological and Vital Statistics Report*, the *International Digest of Health Legislation*, etc., are described in a catalogue which can be supplied free of charge on request.

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WORLD HEALTH ORGANIZATION

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TWELFTH WORLD HEALTH ASSEMBLY

The Twelfth World Health Assembly, which was held from 12 to 29 May 1959, in Geneva, was attended by the delegates of 82 Member and Associate Member States, as well as representatives of the United Nations, specialized agencies, and inter-governmental and non-governmental organizations in official relations with WHO. Observers from several non-Member States were also present.

The session was opened by Dr Leroy E. Burney, President of the Eleventh World Health Assembly, who welcomed the delegates and paid tribute to the memory of Professor Andrija Štampar, President of the First World Health Assembly. He went on to refer to some of the important topics with which the Assembly would have to deal, including malaria eradication, environmental sanitation, and the role of WHO in international research.

The opening meeting was then addressed by Mr Dag Hammarskjöld, Secretary-General of the United Nations, who spoke of what he called " the impressive scope " of the tasks now facing the Organization, going on to say: " . . . your practical work, both directly by its own results and in support of the work of the United Nations and its agencies, is making a major contribution to that improvement in human welfare which is one of the main purposes of the United Nations Charter ".

Next, Mr David Morse, Director-General of the International Labour Office, stressed the continuing co-operation between WHO and ILO, whose interest and work, he said, may often coincide, but never really conflict: " Our medical interest has classically been preventive and is confined to man's personality as a worker. Yours is universal, as our interest in matters of social justice and improvement is universal."

The Assembly unanimously elected Sir John Charles, Chief Medical Officer at the Ministry of Health, Ministry of Education, and Home Office, London, as its President. The three Vice-Presidents elected were: Dr D. El-Azmeh (United Arab Republic), Dr V. Marinesco (Romania) and Dr O. Souvannavong (Laos). Dr. H. B. Turbott (New Zealand) was elected Chairman of the Committee on Programme and Budget, and the Chairman of the Committee on Administration, Finance and Legal Matters was Dr. O. Vargas-Méndez (Costa Rica).

In his inaugural address (see page 296), Sir John Charles spoke of the tasks of the individual worker and of WHO in the field of medical research.

REPORT OF THE DIRECTOR-GENERAL

Introducing his report on the work of WHO during 1958,[1] Dr M. G. Candau, Director-General of WHO, said that, as 1958 had marked the tenth anniversary of the Organization, it was natural that the year's activities should be viewed in the light of the progress made during the preceding decade. He drew the attention of the Assembly to certain aspects of that progress, not so much because of their importance in the past but because of the vital influence they would have on the future work of the Organization. First of all came malaria eradication, a task in which the Member States of the Organization had been engaged since 1955: " Malaria has disappeared from regions of the globe whose population, totalling 300 millions, was previously exposed to the risk of this disease. In still other countries and territories with 700 million to 800 million inhabitants, eradication campaigns are being either already implemented or prepared. This means that of 1300 million people, who, only a few years ago, were actual or potential victims of malaria, only 250 millions still remain unprotected by eradication measures."

[1] *Off. Rec. Wld Hlth Org.*, 1959, 90

Nevertheless, there could be no real progress towards the goal of eradication in any one country unless the conditions for success were established on a world basis, and it was the task of WHO to assist each country to provide these conditions. At the root of the idea of malaria eradication there was undoubtedly the danger of the development of anopheline resistance to insecticides. Ten species of anophelines had already acquired such resistance, and eradication should therefore be pursued rapidly and tenaciously.

The policy of eradication was, however, applicable not only to malaria, but to smallpox as well. If there was one disease in the face of which the world remained indivisible, it was smallpox; as long as it survived in a single country, it constituted a danger for all, and called for costly and complicated precautionary measures. It was to be hoped that the organization of international action against smallpox, under WHO auspices, would finally free the world of a disease which—since the means of its prevention had been known for almost a hundred and fifty years—was an anachronism.

Dr Candau went on to speak of the intensified international programme of medical research which would be discussed by the Assembly. The success of this programme depended to some extent on progress in professional education and training generally. In this connexion, the WHO fellowships programme—one of the most successful and promising aspects of the Organization's work—would have an important part to play.

Finally, Dr Candau spoke of the problem of environmental sanitation, which was one of the principal items on the Assembly's agenda. Although WHO had succeeded in assembling and disseminating the technical knowledge available in this field and had contributed towards the education of environmental sanitation personnel, it had not succeeded in arousing public interest in the problem, nor had it been able to make judicious use of the pilot projects undertaken in the field. The result was that present WHO programmes frequently failed to provide solutions for the environmental sanitation problems caused by the continuous growth of population, and the parallel development of urbanization and industrialization. In fact, it would be no exaggeration to say that, in the matter of environmental sanitation, the world was in a more difficult situation than it had been ten years ago. To attack this problem, WHO would have to take the initiative in establishing a plan of action to provide all the people of the world with an adequate supply of safe water so as to satisfy the elementary needs of hygiene, comfort and cleanliness, both of the individual and of the community.

The general discussion on the Director-General's report gave delegates an opportunity to express the views of their governments on the Organization's policies and achievements and to report on public health developments in their own countries. Some of the main items of discussion are summarized below.

Malaria eradication

The delegates of a number of countries gave details of progress in the fight against malaria. In Ceylon, for example, it was decided in 1957 to launch an eradication campaign which, it was estimated, would last for five years and cost 18 million rupees. The campaign was started in 1958, and it was now found that in view of changing conditions—increasing population, jungle clearance and the influx of people into newly developed areas—an additional 8 million rupees would be required to complete it successfully.

In the Belgian Congo, all urban centres and several large rural areas are already free from the malaria vector. The delegate of Greece stated that malaria has now been eliminated from one-third of the national territory. In India, the eradication programme is making good progress, and complete coverage of the country is in sight. It is anticipated that more than 12 million persons now exposed to malaria in Iran will be protected within the next few years. The campaign in Liberia is also making good progress, and the delegate of Liberia expressed the hope that his would be the first African country to eradicate the disease. In

Peru, eradication has made rapid headway in the coastal areas, while complete eradication is expected in Venezuela within two years. The delegate of Spain stated that, between 1947 and 1958, the number of malaria cases in his country diminished from half a million to only 17. A number of delegates announced that eradication campaigns have recently been launched or are in the preparatory phase in their respective countries.

The delegates of India and Yugoslavia made an urgent plea for further contributions by governments to the Malaria Eradication Special Account, and the delegate of the German Federal Republic announced that his Government would continue to support the fund and intended to contribute a further $350 000 to it during the next two years. The delegate of Poland announced that his Government was prepared to make $80 000 worth of DDT powder available for the world-wide malaria eradication programme.

Poliomyelitis

The delegate of Israel referred to an epidemic of poliomyelitis in his country which appeared to have overcome the protection afforded by vaccination. This epidemic had occurred during the months May-August 1958, after all children between 6 months and 3 ½ years had received two or three injections. In all, 574 cases of paralytic poliomyelitis were notified, representing a rate of 29 per 100 000, the vast majority of cases being due to type 1 infections. Tests for potency showed that antibody conversion rates (of triple negative children) to type 1 virus were of the order of 20-30% after the first two doses and about 50% after the booster injection. These low rates appeared to be due to two causes: a vaccine of low potency against type 1, and the small doses given (the first injections of the 1957 campaign consisted of 0.3 ml given intradermally; subsequently 0.5 ml was given subcutaneously). Since the middle of 1958, an improved vaccine has been used and 1-ml doses are being given subcutaneously at each injection. A close watch is being kept on the situation, particularly during the months when the incidence of poliomyelitis reaches its seasonal peak.

The delegate of Ireland stated that his country's public health authorities were very interested in the possibility of using live virus vaccines, and also in that of incorporating polio vaccines with other vaccines in order to reduce the number of inoculations at present given to children. The delegate of Switzerland also expressed interest in the possibility of using live poliovirus vaccines. More than 60% of the population of Switzerland below the age of 20 have been inoculated with inactivated vaccine, but serological examination has shown that a high percentage of children vaccinated three times at the intervals prescribed by Salk have not formed antibodies against types 1 and 3. Strictly controlled tests with live vaccine are at present being carried out in Switzerland and so far the results have been most encouraging. The Netherlands delegate stated that small groups of volunteers in the Netherlands have been inoculated with live poliovirus vaccine with apparently satisfactory results. Live vaccines are being tested in several other countries and territories, including the Belgian Congo, Colombia and Costa Rica. The United States delegate considered that a number of important problems remain to be solved before live virus vaccines can be used other than experimentally. These include: apparent differences in virulence of some of the virus strains used; transmission of virus from vaccinated to unvaccinated persons; difficulties in feeding the three virus strains simultaneously; and the effect of viruses other than poliovirus in the intestinal tract on the development of immunity to poliovirus. He also expressed some doubt as to the validity of the epidemiological surveillance of the populations so far inoculated with live virus strains.

The delegate of the USSR, where extensive tests of live poliovirus vaccines have been carried out, referred to a meeting just then being held in Moscow between scientists from Czechoslovakia, Poland, the United States and the USSR to discuss the early results of vaccination by such vaccines.

Tuberculosis

The delegate of Turkey observed that, while tuberculosis has ceased to be a major health problem in certain countries, the disease still persists in almost every part of the world. He was particularly glad, therefore, to note that studies had been carried out on a BCG vaccine which would retain its biological properties over a long period under adverse climatic conditions. The delegate of South Africa stated that tuberculosis was the most important public health problem in his country, and that the same was true of many other countries which were also undergoing rapid industrialization. Fortunately, he added, scientific knowledge and effective drugs are available for dealing with the disease, provided national programmes are well planned; in this respect the technical advice and assistance of WHO are invaluable.

Speaking of the results obtained at the Madras Tuberculosis Chemotherapy Centre, the delegate of India said that they demonstrate the possibility of rendering infective cases in crowded urban areas non-infective by treatment with drugs suitable for self-administration at home. A warning about this form of treatment came, however, from the delegate of Switzerland, who said that it is a source of concern to many phthisiologists because of the risks involved if it is not applied with the requisite competence, perseverance and regularity. Another problem mentioned by the same delegate was that of the use to which the hospital beds freed by the decline in tuberculosis are now being put. In this connexion, the delegate of Spain stated that, of the 22 000 beds formerly reserved for tuberculosis cases in Spain, 10 000 are now available for sufferers from cardiovascular disease and for handicapped children. The United Kingdom delegate considered that an important aspect of tuberculosis to which WHO should give more attention is that of rehabilitation.

The delegate of Poland stressed the importance of providing a legislative basis for any programme of tuberculosis control and described the operation of the Tuberculosis Act passed in his country at the beginning of 1959. This Act provides for: free services for the prevention and treatment of tuberculosis; rehabilitation, both medical and occupational; compulsory medical examinations for case-finding; compulsory treatment; and BCG vaccination.

An interesting development in the international co-ordination of tuberculosis control in Latin America was referred to by the Peruvian delegate. In an area of 5 million inhabitants situated partly in Peru and partly in Bolivia, the incidence of tuberculosis is as high as 10%. An agreement has therefore been signed by the two countries for the organization—with the technical co-operation of the Andes Mission, UNICEF and WHO—of economic, nutritional and tuberculosis surveys to be carried out among the population of this area. The tuberculosis survey will employ tuberculin-testing and mass radiography and will be followed up by a BCG vaccination campaign.

Progress in the treatment of tuberculosis was reported from a number of countries and territories. The delegate of Israel stated that the tuberculosis mortality rate in his country has gone down to less than 5 per 100 000. A tuberculosis demonstration and treatment centre has been established in Addis Ababa by the Government of Ethiopia. In Greece, a tuberculosis dispensary has been set up in the Athens area for research, treatment, the training of medical and auxiliary personnel, tuberculin testing, the vaccination of the population of the area, and the study of statistical data.

Smallpox

Details on the production of smallpox vaccine in Nigeria were given by the delegate of that country. Since 1932, when production first began, Nigeria has been one of the largest producers of smallpox vaccine in the world, supplying not only national needs, but those of some other West African countries as well. In recent years, it has produced a stable dried vaccine which does not require refrigeration but retains its potency for several years; extensive field trials have shown that this vaccine compares favourably with any similar vaccine produced elsewhere in the world. In 1958, Nigeria produced

7 500 000 doses of smallpox vaccine at the very low average cost of less than one halfpenny sterling per dose.

The delegate of Portugal stated that smallpox had been eradicated in his country since 1954, and that eradication of the disease, as a result of mass vaccination, would shortly be completed in Portuguese territories overseas. Considerable progress in the treatment of smallpox has been made in Viet Nam since compulsory vaccination was introduced in 1954: there were 3500 cases of the disease in that year, but only 30 in 1958. Sufficient dried vaccine has been produced by the Pasteur Institute of Viet Nam not only to serve the country's own needs but to supply neighbouring countries with 250 000 doses. A striking decline in the incidence of smallpox was also reported from the Republic of Korea where only 7 cases were recorded in 1957, as compared with over 43 000 cases in 1951. As a result of the nation-wide campaign against smallpox in Iraq, not a single case of the disease has so far been reported there this year. In Colombia, it is hoped that 80% of the population will be vaccinated against smallpox within the next two years. Widespread preparations are being made for a mass antismallpox campaign in Ghana, and it is hoped that neighbouring countries will help by carrying out active campaigns in their own territories. Smallpox eradication campaigns are also being planned in Ethiopia and Iran.

Bilharziasis

The delegate of the Sudan drew attention to an outstanding achievement in the field of bilharziasis control: the complete eradication of snail vectors of bilharziasis in the country's network of canals, totalling 8000 km in length. Vigilant maintenance and supervision since eradication was achieved have kept the area—a densely populated one with thick vegetation—free from snails over a period of four years.

Difficulties were reported in the bilharziasis project in Iraq, mainly because of staffing problems; it was expected that the control and eradication of the disease would be complicated still further by the new land reform law which, although contributing immeasurably to the improvement of health and living standards in general, involves irrigation projects liable to cause an increase in the incidence of bilharziasis. The delegate of South Africa mentioned that such an increase has occurred as the result of irrigation schemes in those areas of South Africa which, formerly malarious, are now being opened up for agricultural development. In Ghana, it is feared that the disease may also spread as development plans are put into operation.

The United Kingdom delegate observed that, while much is already known about the parasite that causes bilharziasis, as well as about control measures, not so much attention is paid to its effect on the community. He illustrated this statement by taking the case of an area in Uganda where some 100 000 people are infected : in the children there is much anaemia and enlargement of the spleen, yet after the age of 20 the infection seems to disappear. Moreover, the type of infection varies so much from area to area that indiscriminate treatment of all infected people may not be the best means of control but may destroy immunity naturally built up in certain areas.

Leprosy

The delegate of the Philippines expressed the hope that the data on leprosy collected by WHO would be made available to Member States as soon as possible. The Philippines authorities are also collecting and tabulating data on leprosy, and estimate that the relapse rate during the first five years after the disease has been arrested is normally 1.5%, and that it is 3% for cases in which treatment has not been continued. There have been some cases of relapse more than eight years after the disease has been arrested.

The delegate of Peru reported encouraging results in leprosy control by means of BCG vaccination; this method is also being used in Colombia and Venezuela. In India, apart from 150 leprosaria with about 25 000 beds and over 1200 clinics, there are 72 leprosy case-finding and treatment centres with mobile teams. These have so far surveyed

5.5 million people and found 53 000 cases, of which 46 000 are at present being treated. A considerable amount of the health budget of the Republic of Korea is spent on the care of nearly 20 000 leprosy cases (out of a total of 45 000) in government-supported institutes, while in Nigeria about half a million leprosy patients are receiving regular treatment. The leprosy control programme in Thailand, which started in 1955 in one northern province, was last year extended to three more provinces, where it is being conducted by means of house-to-house surveys and domiciliary treatment. The Viet Nam authorities are engaged in a vigorous antileprosy campaign; new dispensaries have been opened for the treatment of the disease and mobile teams, each consisting of one health officer and one male nurse, are being organized. The delegate of Viet Nam urged increased technical and material assistance by WHO in the fight against leprosy. The Government of Pakistan, where leprosy has been a scourge for generations, has now decided to undertake a campaign for the eradication of the disease.

Venereal diseases and the treponematoses

Good results in the campaign against venereal diseases were reported by the delegate of Morocco, where systematic treatment of certain sections of the population with PAM (procaine penicillin G in oil with 2% aluminium monostearate) has almost completely eradicated syphilis. Since the beginning of the campaign, almost one million people have been treated.

Further progress in yaws control was reported by the delegate of Nigeria, where 4 million cases have been treated, and by the delegates of Colombia, Liberia, Sierra Leone and Thailand. The delegate of Indonesia said that his country's yaws eradication campaign, which was the largest in the world, had had to slow down in 1958 for reasons beyond the control of his Government; so far in the campaign no serious side effect from the penicillin used had been observed in any of the millions of people treated. The delegate of France expressed his appreciation of WHO's co-operation in research work on yaws in French territories. In a general statement on problems of dermatology, Professor W. Jadassohn, of the International League of Dermatological Societies, spoke of the immense value of WHO's achievements in the control of yaws and endemic syphilis.

The delegate of Italy thought that the successes recorded in the control of the venereal diseases and treponematoses should in no way lead to a slackening of effort in this sphere. In fact, the incidence of syphilis has shown an upward trend in a number of countries during the past few years, and gonorrhea is being more and more characterized by lessened sensitivity, or by greater resistance, to penicillin on the part of the gonococci. Moreover, while the WHO campaigns against endemic treponematoses have been remarkably successful, it was the opinion of the delegate of Italy that an all-out effort should now be made for their total eradication.

Communicable eye diseases

Several delegates expressed their appreciation of the WHO/UNICEF-assisted programme against the communicable eye diseases, which has already been extended to 11 countries and in the course of which more than 6 million people have been examined and more than 4 million treated. The delegate of Yugoslavia gave an account of the campaign against trachoma undertaken in his country shortly after the Second World War. In 1947, case-finding surveys began in all the areas where trachoma was endemic, and during the period 1947-1952 more than 2.5 million people were examined; WHO/UNICEF assistance to the campaign began in 1954. In 1949, there were more than 86 000 cases; by 1958 the number had fallen to 21 000. The proportion of progressive cases has declined remarkably. Treatment is given mainly at home and in schools, and cases are hospitalized only when surgery is necessary. Excellent results have been obtained by treatment with antibiotics, which was started in 1954.

Progress in this field was also reported by the delegate of Morocco, where the WHO/UNICEF-assisted campaign against communicable eye diseases has covered a million people in the past year; this campaign includes health education as well as case-finding and treatment. The delegate of Greece spoke of the decline in the prevalence and incidence of trachoma and allied eye diseases in his country, where there has been a network of antitrachoma dispensaries for a number of years.

A trachoma pilot project among Indonesian schoolchildren was completed in 1958. A campaign against infectious eye diseases is to be undertaken by the Government of Jordan next year, and a similar campaign is in the planning stage in Libya.

The delegate of Israel felt that more attention should be paid to the sequelae of trachoma which are of great social importance; he also observed that it had been found in Israel that, as the living and hygienic standards of immigrant groups improved, trachoma gradually died out without much active treatment.

The filariases

The delegate of France called for intensified research on, and control of, onchocerciasis in Africa and filarial infections in the Pacific, suggesting that WHO send experts to the affected areas to help the health authorities with mass control campaigns. The delegate of Ghana said that onchocerciasis was a disease of serious public health importance in his country, where a medical field unit has for some time been seeking solutions to the problems involved in its control. A WHO-assisted study of blindness due to onchocerciasis, and ways of preventing it, has been undertaken in the Sudan; this problem is also a source of grave concern to the Nigerian health authorities. The delegate of Sierra Leone hoped that it would shortly be possible to proceed with the control and eradication of onchocerciasis in his country, where some of the earliest and most important research on the disease was carried out. Onchocerciasis has recently been discovered in Venezuela, and the incidence appears to be high in those areas where it has so far been found, although ocular lesions seem to be less frequent and less serious than in other countries. The disease has also been reported recently in Aden and the Yemen.

The delegate of Ceylon spoke of the problem of endemic filariasis in the western part of his country. The economic losses due to the disease are serious, since two of the country's most important sources of revenue—the coconut plantations and the fishing industry—are centred in the endemic area. In India, a nation-wide programme of filariasis control has been started.

The delegate of Italy suggested that certain arthropod-borne diseases, such as filariasis and leishmaniasis, should receive more attention from WHO. Supporting this suggestion, the delegate of Indonesia stated that filariasis is endemic in various parts of his country, where a shortage of trained personnel makes it difficult to give the disease the attention it needs. It was his opinion that WHO could foster and encourage at least the beginning of research on the epidemiology, treatment and prevention of filariasis in Indonesia and elsewhere.

Diarrhoeal diseases

The delegate of Israel said that his Government was anxious for more data and advice on diarrhoeal diseases, which are an important problem in all Eastern Mediterranean countries. A pilot project conducted in Israel with 700 children seems to indicate a variety of etiological agents; no correlation has been found with overcrowding, though it has with the type of milk used. The delegate of Cuba said that during the first half of the present century, his country's most serious mortality problem has been that of deaths from diarrhoea and enteritis among infants under 2 years of age. The principal cause of these diseases in Cuba is intestinal parasites, particularly *Trichuris*, with which almost 100% of the inhabitants of certain areas are infested.

Maternal and child health

Substantial reductions in infant mortality were reported by a number of delegates, although diarrhoeal diseases and protein malnutrition continue to be responsible for high infant death rates in certain countries. The delegate of Austria spoke of the special measures being taken in his country, with the help of WHO and UNICEF, to reduce the high infant mortality resulting from premature births. In this connexion, a plan for the establishment of centres for the care of premature infants in Austria has been established; a further WHO-assisted programme has led to an improvement in the production of vaccines and sera for the protection of Austrian children.

The Ministry of Health for Libya is giving priority to maternal and child health training projects and the establishment of maternal and child health sub-centres throughout the country. Israel is paying particular attention to the development of maternal and child health, and its public health authorities are convinced that the general improvement in the country's health is due in large part to better services in this field. In Poland, special emphasis is being laid on preventive work in maternal and child health, and a large-scale training programme for child health officers, including three-month courses in social paediatrics, has been started. After careful planning, the Government of Peru is about to institute a maternal and child health programme with UNICEF assistance; infant malnutrition remains a serious problem in this country, and a solution is being sought by developing the health instruction of mothers.

Mental health

The delegate of the United Kingdom expressed gratification at the fact that WHO had embarked on a long-term programme for the study of the epidemiology of mental disorders and that studies have also been made on social psychiatry as well as the mental health problems of aging. He went on to describe the study now under way at Graylingwell Mental Hospital in England to discover whether the provision of large-scale psychiatric treatment on an out-patient basis can materially affect the great annual increase of admissions to mental hospitals. This service is centred on a day hospital providing active treatment for twenty to thirty patients, with a staff of three psychiatrists, occupational therapists, psychiatric social workers, an almoner and nurses. It is claimed that, as a result of its work, there has been a reduction of 56% in the number of patients admitted to the local mental hospital in one year.

The importance of mental health work and of support by Member States of WHO of the Mental Health Year, sponsored by the World Federation for Mental Health, were stressed by a number of delegations.

Environmental sanitation

A number of delegates mentioned the serious health problems arising from inadequate environmental sanitation in their respective countries. In Ceylon, for example, one out of every seven hospital patients and one out of every five out-patients at dispensaries suffer from parasitic or water-borne diseases, while the absence of any form of water supply in certain parts of the Sudan means that many of the inhabitants are nomads wandering from one source of water to another. The Iranian delegate stated that the main concern in his country, and presumably in a number of others, is the provision not only of pure drinking-water but of adequate water supplies to every community.

In Portugal, where 96% of the towns and cities now have supplies of pure drinking-water, a special effort is being made to extend these supplies to all villages with more than 100 inhabitants; a parallel effort is being made in Portuguese territories overseas.

In India, an extensive programme is now in operation for the provision of pure water supplies in both urban and rural areas, and the delegate of India suggested that a full and exhaustive survey of water requirements should be made in each country with a view to evolving a systematic plan for supplying

them within a measurable period of time. He added that, while WHO could not be expected to make substantial financial contributions in this connexion, owing to its limited budget, its technical aid would be invaluable. The United States delegate also stressed the importance of potable water supplies and stated that the President of the United States had asked Congress to make funds available for WHO's programme in this field. The delegate of Morocco considered that the problem of sewage disposal, as well as that of water supplies, should be given special attention.

Education and training

A shortage—in some cases an almost total absence—of health personnel continues to hamper public health programmes in various countries. In Nepal, the delegate of that country stated, there is only one doctor for every 80 000 inhabitants, and there were no qualified nurses until recently. To meet the shortage of doctors, advantage is being taken of the fellowships in basic medical training offered by such agencies as WHO and the Colombo Plan and by governments of other countries; during the next five years 150 more medical graduates should be available, but even then there will be only one doctor for every 32 000 people. As an interim measure, a school for health assistants was started three years ago with help from WHO. Two batches of students have now graduated and are operating 13 health centres; it is expected that a further 24 centres will be established this year. With the help of WHO, a school of nursing has also been started, but the absence of a hospital with suitable training facilities in midwifery is a great handicap; the WHO Regional Office for South-East Asia has therefore awarded fellowships to enable nurses from Nepal to study midwifery in India. The Indian Government is now helping with the establishment in Nepal of a maternity hospital and child welfare centre where midwifery training can be given in the future.

The delegate of Libya also stressed the lack in his country of the necessary trained personnel for the operation of even routine health services; moreover, for some years to come it will be impossible to find candidates with the basic qualifications required for training even as laboratory technicians in recognized institutions abroad. In the opinion of the delegate the only way to fill the gap would be for WHO to send teachers to the country and give instruction, in the local language, to candidates showing suitable ability even though their formal educational qualifications might not reach the standard required for training elsewhere.

Several delegates referred to the opening of new schools for health personnel. In Peru, for example, two new medical schools and three schools of nursing were opened in 1958, and a school for nursing instructors will be opened this year. In Venezuela, a public health school has been opened at the Medical Faculty of the Central University at Caracas. In Iraq, a second medical school has been opened: it is intended for students from the northern part of the country and its graduates will serve in their own areas, thus reducing the concentration of doctors in the towns.

The delegate of Spain considered that the training given in medical schools should be adapted to meet the needs of modern society, and above all that it should lay greater stress on the preventive aspects of medicine. Several other delegates spoke of the increased attention being paid to the social and preventive side of medicine in medical schools in their respective countries, and welcomed WHO's efforts to promote the concept of prevention in undergraduate medical training.

There was general appreciation of the WHO fellowships programme. The delegate of Poland reviewed the extensive facilities for training and research in his country, and stated that his Government would be happy to offer fellowships for work in research institutes and medical schools to candidates from abroad.

Atomic energy and radiation

The delegates of several countries spoke of the need for adequate protection of the public

against radiation. The United Kingdom delegate referred to the interim report of a committee set up by his Government to examine the possible dangers from radiological examinations. The report refers particularly to mass radiography and concludes that the benefits may far outweigh the genetic or somatic hazards which there might be to the adult population from the small amount of radiation involved if the surveys are well conducted. The use of mass radiography for the examination of schoolchildren is, however, considered by the Committee to be undesirable. While radiological examination of pregnant women for tuberculosis may be useful, such examinations should be restricted in number and full-size film with stringent limitation of field size should be used.

The delegate of Canada stated that his Government has set up a special laboratory to perform the necessary analyses in connexion with radiation protection, and that special measures have been taken in Canada to control the disposal of radioactive wastes.

In reply to a question from the delegate of Finland, Dr P. Dorolle, Deputy Director-General of WHO, spoke of the speed with which developments in radiation are superseded, and of the problem of providing Member States with the most up-to-date information in this field. He thought that one of the best methods is through training courses at which the participants can be given information that has not yet become widely available in printed form.

Miscellaneous

Other topics mentioned in the discussions on the Director-General's report included: action against cancer, cardiovascular disease and rheumatism; public health administration; dental health; medical rehabilitation; occupational health; health assistance to rural populations; and health education. Several delegates were particularly concerned about the health problems posed by the rapid increase in world population.

* * *

The debates on the Director-General's report concluded with reviews by the Regional Directors of work in their respective regions during 1958.

BUDGET FOR 1960

A regular budget of $16 918 700 for 1960, representing an increase of about 11% over the budget for the present year, was approved. It includes a sum of $500 000 for WHO's programme of international medical research.

PROGRAMME FOR 1960

International Health and Medical Research Year

The United Nations General Assembly, on the proposal of the delegation of the Ukrainian SSR, has invited the World Health Organization to organize—primarily on a national basis—an International Health and Medical Research Year, to be held preferably in 1961. This invitation and an associated proposal by the Government of the United States of America were discussed earlier this year by the WHO Executive Board, which asked the Director-General to submit a report on the subject to the Assembly.

In the Assembly's debates, opinion was divided. On the one hand, stress was placed on the impetus which the proposed International Year would give to existing health programmes, the training of health personnel, research, and the raising of health standards in the economically less developed countries, the International Geophysical Year being cited as an example of a similar undertaking which had brought about tremendous results at relatively little cost in money and effort. On the other hand, it was held that, as WHO was about to intensify its efforts in research and disease control, the holding of an International Health and Medical Research Year would serve no useful purpose and might even do harm by dissipating funds that were badly needed for existing projects. It was finally decided to reconsider the matter at the Thirteenth World Health Assembly in 1960.

Malaria eradication

The Assembly discussed a report by the Director-General on the development of the malaria eradication programme. After an introduction describing the evolution of the policy of malaria eradication, the report reviewed the situation in each of the six regions. Brief descriptions were given of current pilot projects, the majority of which are in Africa, where experimental work on the best means of interrupting transmission is most needed. The next section concerned special research projects supported by WHO, and was followed by a section on the present status of insecticide resistance in malaria vectors. Finally, there was an attempt to appraise the total cost of world-wide malaria eradication, which was estimated at $1 691 000 000.

It emerged from the discussions that there was general agreement on the need for participation by the general public in malaria eradication campaigns; for this, successful health education and propaganda are vital. Several delegates stressed the need for more fundamental field and laboratory research into the problems of eradication, such as surveillance techniques, chemoprophylaxis and chemotherapy, resistance, and the development of suitable alternative insecticides for the elimination of vector species resistant to DDT and dieldrin.

The delegate of Nigeria stressed the urgency of developing the pre-eradication programmes now in operation in Africa, particularly since these programmes have shown that, although the problem of eradicating the disease in tropical Africa is not yet solved, it is very close to solution. Further technical and financial details on national eradication programmes were given by a number of delegates.

The Assembly emphasized the need not only for sound technical planning and direction of operations in eradication programmes, but also for " a high degree of efficiency in administration and organization supported by adequate legislative action ", and urged governments to ensure that their malaria services are provided with adequate administrative machinery " to meet the stringent demands of such a time-limited programme ".

The Assembly also discussed the status of the Malaria Eradication Special Account, which stood at $8 615 000 as of 11 May 1959.[2] This sum was expected to cover eradication operations planned to be financed from the Account up to the end of 1959, but no funds were available to cover the operations planned for 1960, not to mention the following years. Approximately $7 000 000 were needed to cover operations in 1960.

Grave concern at this situation was expressed by a number of delegates. The delegate of Iraq pointed out that the bulk of the funds for the Special Account has to be provided by Member States, but that the less highly developed countries find it difficult to contribute since they are in many cases already devoting a very substantial part of their health budgets to malaria eradication campaigns within their own boundaries. Nevertheless, most of the limited number of Member States which had contributed to the Malaria Eradication Special Account were among the less developed countries, while with a few exceptions—notably the United States, which had contributed the bulk of the sum now available—the more economically developed countries had so far failed to respond to the appeal. Several delegates expressed the reservations of their governments concerning the principle of establishing special accounts outside the regular budget.

The Director-General of WHO stated that, unless contributions were forthcoming, the malaria eradication programme might well fail as early as 1960; it should not be forgotten that a world-wide campaign was necessary, and that if the problem of malaria were not solved everywhere the money spent would, in fact, be wasted. If the question at stake were merely the method of making funds available, the alternative might be for a specific amount for malaria eradication to be included in the annual regular budget of the Organization.

The Assembly urged those Member Governments which have not yet contributed to the

[2] See also page 333.

Malaria Eradication Special Account to make every effort to do so, and invited contributions from foundations, industry, labour organizations, institutions and individuals. The position of the Account will be reviewed by the Executive Board next January; should contributions still be insufficient, the Board will consider measures to remedy the situation.

WHO publications

Opening a discussion on WHO publications, Dr N. I. Grashchenkov, Assistant Director-General of WHO, spoke of them as being "a real shop window of WHO activity and a pool of the experience of many countries". There was general agreement that these publications are of a high standard, and that they serve a useful purpose, for, as the delegate of Finland observed, they are the means through which the Organization becomes generally known. The delegate of Sweden remarked that there was no doubt that WHO publications had contributed to the effectiveness and the reputation of the Organization throughout the world, adding that Swedish health authorities and institutions regarded them as being of the highest importance. Such publications as the reports of the Expert Committees on Poliomyelitis, Water Fluoridation, and the Organization of Medical Care had been of considerable value to the Swedish health administration.

The delegate of Yugoslavia also spoke of the value of WHO publications as a source of guidance to national health authorities, while the delegate of Ecuador stressed their usefulness in keeping the less developed countries up to date on scientific progress. In the opinion of the delegate of Bulgaria, brevity and clarity of presentation were the most valuable features of these publications. The delegate of the USSR found the activities of WHO in the matter of publications to be deserving of high praise. He mentioned in particular the scientific and practical interest of the *Bulletin of the World Health Organization*, the *Epidemiological and Vital Statistics Report* and the *Monograph Series*, and hoped that a wider range of WHO publications would in future be issued in Russian.

OTHER BUSINESS OF THE ASSEMBLY

Headquarters accommodation

The Assembly was asked to consider the urgent matter of providing suitable and adequate accommodation for the Headquarters of WHO. The space occupied by the Organization at the Palais des Nations, Geneva, is no longer adequate; in fact, additional office space has had to be rented elsewhere in Geneva. Moreover, there is no possibility of extending the Palais des Nations to meet the growing requirements of both WHO Headquarters and the European Office of the United Nations. A report on the subject submitted to the Assembly contained the results of consultations between the Director-General and the authorities of Switzerland and of the Republic and Canton of Geneva, who have offered to assist the Organization in the construction of a suitable building on a site near the Palais des Nations, Geneva, by advancing loans totalling some Sw. fr. 30 000 000 towards the estimated over-all cost of Sw. fr. 40 000 000.

After lengthy discussion, the Assembly decided to accept this generous offer and asked the Executive Board to arrange for the choice of an architect and a building plan by international competition.

Co-operation with UNICEF

The Assembly heard a statement by Mr Maurice Pate, Executive Director of the United Nations Children's Fund (UNICEF), which was read by Sir Herbert Broadley, the Fund's representative in the United Kingdom. Mr Pate underlined the close association between UNICEF and WHO, both of which were concerned with better health standards, one helping to see that children were given the best possible start, the other covering the whole span of human life. In UNICEF's programme, about 270 projects—three-quarters of all those aided by the Fund—were in the health field and, therefore, planned and operated under the technical guidance of WHO. From its foundation in 1946 to the end of 1958,

UNICEF spent $85 million in material aid for health projects, and at the beginning of this year a further $17 million were allocated for this purpose. Important new activities were envisaged in the long-term programmes of both organizations, and it was fortunate that these would devolve upon them at a time when they both had more than ten years' experience and had reached a stage when co-operation between them was accepted as a matter of course and smoothly carried out to the satisfaction of the governments concerned. UNICEF was very much aware of the broader activities of WHO, which provided the foundation for much of the work of UNICEF, and welcomed the fact that WHO was extending its activities in the field of medical research.

Many delegates voiced their gratitude for the help given to their countries by UNICEF in the form of supplies for health projects, and the Assembly expressed in particular its appreciation of the substantial support given by UNICEF to the world-wide malaria eradication programme, and its hope that this support will be maintained until the complete eradication of malaria is achieved.

New Members

Colombia and the Republic of Guinea have deposited with the Secretary-General of the United Nations formal instruments accepting the WHO Constitution, thus becoming Members of the Organization. As a result, WHO has now 87 full Members and 3 Associate Members.

Membership of the Executive Board

The following States were elected as Members entitled to designate a person to serve on the Executive Board: Ireland, Luxembourg, Nepal, Peru, Sudan and Venezuela.

The Assembly amended the Constitution of WHO to increase the number of persons designated to serve on the Executive Board from 18 to 24. This amendment, which will come into force when accepted by two-thirds of the Member States, was proposed in view of the fact that, since 1948, when the First World Health Assembly met, the membership of the Organization has increased from 53 to 90. During the debate on the amendment, a number of delegations urged that the six new seats on the Executive Board should be equitably distributed among the six WHO regions.

Renewal of Director-General's contract

The Assembly offered to renew the contract of Dr. M. G. Candau, Director-General of WHO, for a further three years, i.e., until July 1963, " to assure further successful development of the Organization ". Dr Candau has been asked to communicate his decision on this offer to the President of the Twelfth World Health Assembly on or before 1 November 1959.

Technical discussions

The technical discussions at the Assembly were on the subject: " Health education of the public". A summary of these discussions will be found in a separate article.

Place of the Thirteenth World Health Assembly

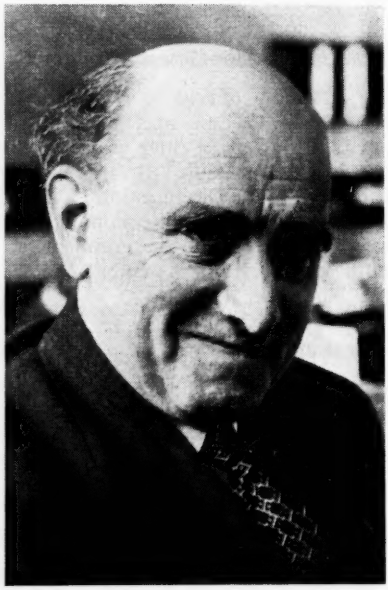
The Thirteenth World Health Assembly will be held in May 1960 in Geneva.

* * *

The Assembly's discussions on three topics of special interest—international medical research, environmental sanitation, and smallpox eradication—are dealt with in separate articles.

PRESIDENTIAL ADDRESS BY SIR JOHN CHARLES

In the course of a distinguished career, Sir John Charles has served as Honorary Physician to H.M. King George VI, as Bradshaw Lecturer and Harveian Orator at the Royal College of Physicians, as Medical Officer of Health for the City and



SIR JOHN CHARLES
President of the Twelfth World Health Assembly

County of Newcastle, and as Examiner in Public Health at Edinburgh and other Universities. In 1935 he became a Fellow of the Royal College of Physicians, and since 1950 he has been Chief Medical Officer at the Ministry of Health, Ministry of Education, and Home Office, London. He was Chairman of the Executive Board of WHO at its twentieth and twenty-first sessions (1957-1958).

No one can attain to the illustrious distinction of President of this Assembly without a conscious recognition both of the honour that has been conferred upon the country whose representative he is, and of his own shortcomings—shortcomings which the Assembly with its customary charity and forbearance has so kindly overlooked. My Government is very sensible of this tribute to the endeavours, extending now over many decades, with which it has striven to foster those ideas of international co-operation in the field of health which are in themselves a contribution to the perpetuation of peace and goodwill among nations.

As each succeeding President takes up the torch from his predecessor he has need to pause for a moment while he reminds the Assembly not only of the efforts of our founding fathers, those splendid enthusiasts and seers of visions, but of the magnificent contributions made by so many still with us, and whose achievements it is an honour to acclaim. Amongst them is our retiring President—foremost indeed in our memories, and ranking also with the greatest of his predecessors in his understanding of the problems and needs of this organization; in his dispatch of business, simplicity of manner, directness of address and above all in his friendliness. Citizens of his great republic have served WHO well—Tom Parran, Leonard Scheele, Fred Soper, to mention only a few—but none has done so more memorably than Leroy Burney.

Moreover, he will always remind us of Minneapolis—that wet and windy city with the hospitable heart—and of the Tenth Anniversary Commemorative Assembly—a ceremony of rededication—and of the Eleventh Assembly also, with its challenging acceptance of new responsibilities. It is impossible to forget Minneapolis and the great state of Minnesota and the unfailing generosity of their inhabitants. Those who lingered longest in Minneapolis were the members of the Executive Board. There at their twenty-second session and again in Geneva at their twenty-third, they have prepared the agenda for this Assembly—a galaxy of projects, and studies which will satisfy our administrative and deliberative appetites for the next fortnight. We can thank the Board and its Chairman, Dr Percy Moore, for all they have done for us.

Nor would it be appropriate for this occasion to pass without a salute to the Director-General and his staff, now a thousand strong. To his gifts of leadership, tact, persuasiveness, and indefatigable and selfless industry, to his perspicacious vision, this organization owes its harmonious and promising

translation from the first to the second decade of its existence, from the tentative strivings of its early years to the robust potentialities of its adult life. For the achievements of the Organization we need look no further than its now numerous and extensive annals. They include the verbatim proceedings of the Executive Board and the Assembly, weighty and full of substance for the future historian. But for the general reader, and for the delegate who, strange to say, does not find his greatest solace in the austere pages of the budget, there is a world of fascination in the annual statement, descriptive of " The Work of WHO "—the report of the Director-General.

The record of 1958 is no less pregnant with information, interest and inspiration, and yet in certain respects it is a little different. It sets out with all its customary and romantic detail the achievements of WHO, in each of its six regions—varying in minutiae, but not in the fundamental objective of human betterment. It describes the progress towards fulfilment of that great idea of malaria eradication—still in its phase of evolution and development. It foreshadows the application of the grand strategic conception of eradication to other, and perhaps more amenable, diseases.

But over all there broods the slightly restless air of new ambitions. One detects the shadow of Minneapolis, and the knowledge that there are new fields of endeavour ready to be tilled by the Organization, and amongst them those of environmental sanitation and medical research.

We are all sanitarians—some of us more fortunately situated than others. Perhaps we bask at our ease in the complex pipeline civilization of the western world, not forgetting of course the as yet often unmitigated pollution of the atmosphere which is such an unnecessary concomitant of industrial effort. Perhaps, on the other hand, we are engaged upon a continuing and only slowly successful battle with nature. Yet the principles of our training and practice are the same. We know that the healthy environment, expensive though it may be to obtain, and slow to be achieved, is an essential component of healthy living.

And so to this question of research.

There is no more salutary occupation for any scientist than to study the writings of his predecessors in the same fields of activity. He will learn how his intellectual ancestor appeared, at any rate to himself, to be at the peak of knowledge; he will learn too how many investigators never carried through their tasks to completion; and how knowledge often advances by leaps, rather than from step to step. He will remember that the mantle of the prophet does not sit well on the shoulders of the scientist—and if he is in danger of forgetting that fact, let him be reminded of the fate of the prophecies of the English statistician and anthropologist, Karl Pearson, who in 1903 said this:

" Looking around from the calm atmosphere of anthropology I fear there really does exist a lack of leaders of the highest intelligence—in science—in the arts—in trade, even in politics. I see a want of intelligence in the merchant, the professional man, and the workman. We stand at the commencement of an epoch which will be marked by a great dearth of ability."

How tremendously the events of the past half-century have falsified those views. Six hundred years ago, the first of English scientists, Roger Bacon, tabulated the four grounds of human ignorance. They were: trust in authorities not properly studied; custom which leads us to prefer the old to the new; confidence in the opinions of the inexperienced; and, finally, hiding of ignorance under a parade of superficial wisdom.

These four causes of ignorance still hold the field, and the greatest amongst them is the unwillingness of the human being to say " I do not know ".

Let us consider for a moment the inner meaning of the word " research ". Looked at historically it has the meaning of intensive enquiry, or repeated effort, even of " pursuit ". The French word " *recherche* " is, I believe, sometimes applied to that form of fervent pursuit which we in England call " courtship ". To most of us " research " means " organized research ", a form of human activity as old as Aristotle, whose thirty-eight books of " Problems for Solution " mirror the inquiring restlessness of the Grecian mind.

He prefaces all his questions with the Greek words " $\delta\iota\alpha\ \tau\iota$ " or " why ", and he asks such 64 thousand dollar conundrums as these: Why is it that those who have spongy teeth are not long lived? Why does sneezing stop hiccough, and not belching? Why is it we have more sense when we grow older, but learn more quickly when we are young? Why in listening to speeches do many prefer examples and stories rather than arguments? But Aristotle not only asked questions; he undertook research.

The modern research worker usually organizes his research along one of two lines of enquiry. The first which has been called the " Edisonian " approach involves the trying out of all conceivable possibilities, more or less at random. It is a method which tests thousands of samples of soil to find a score of new antibiotics, none of which may be safe enough to use on human beings.

It is a method prodigal of expense, sometimes successful, but not always so.

I often feel that it is like casting a net into the sea thousands of times on the chance of catching one coelacanth. In comparison the orthodox method of approach is slow, and almost ceremonial.

It is an approach based primarily on the inductive method of Francis Bacon—the process whereby from assembled facts a general law is derived, but yet it also owes much to the method of deductive reasoning instituted by Descartes. Its several stages have been described by many workers from Descartes onwards, but by none more enthrallingly than by the great Cambridge woman botanist, Agnes Arber. The first stage according to Dr Arber is the choice of a question to answer, or an area of biological or scientific thought to explore. And, having found his question, the researcher will almost certainly be driven to seek out the necessary facts to work upon—either by observation or by experiment.

Now, he must avoid the sensuous pleasure of seeking facts simply for the joy of seeking. Dr Arber makes her warning even more specific. There are certain, rhythmic, repetitive actions to beware of. "The mechanical pleasure," she says, "of cutting microtome sections may lull the mind into serene inaction, and comfortable passivity."

And so the worker comes to the third stage of his journey—the formulation of the hypothesis, based on an exposition of the data he has collected, and a search for the relationship between them. The fourth stage involves the testing of the hypothesis, not by repetition of the observations or experiments necessarily, but often by an examination of the logic of the processes of thought which have led to the conclusions.

And then, finally, there is the fifth and final stage of the journey—the task of presentation. That is inevitable, for to shirk it means that the research worker is failing both himself and his contemporary workers in the same field by withholding communication of his discovery. Communication, once regarded as unimportant, is now esteemed essential. The research worker may think himself an unfortunate person. He has mastered his scientific techniques and now he must master the arts of the writer, and present his conclusions clearly, concisely and coherently, so that he who runs may read.

George Trevelyan, the historian, has said: "What is easy to read, has been difficult to write ... the easy flowing connexion of sentence with sentence has always been won by the sweat of the brow."

So much for the individual worker. His task ends with the catharsis of communication. But for those like ourselves, members of this great Assembly, whose concern is less with the individual problem, and more with the organization of researches and investigations to a common end and purpose, there remains the modern necessity of co-ordination.

Even on a national basis, co-ordination of research is not easy, for one must allow the questing, inquisitive human intellect to range where it will. But co-ordination, not so much for the prevention of overlapping or redundancy, but rather for ensuring that workers in the same field are aware of the activities of other researchers with similar interests—that has become of paramount importance.

There are therefore two main points of entry for WHO into the fields of medical research, apart, of course, from the access it has already obtained by virtue of its own unique contribution to research, particularly in tuberculosis and the virus diseases.

Without entering into or commenting upon that clamant catalogue of research projects outlined in the report of the Director-General, the two portals of entry I refer to are those inscribed "co-ordination" and "communication".

By means of the first we shall hope to save scientists and their supporters much unnecessary endeavour. By means of the second WHO will seek to ensure that happy synthesis of ideas and harmony of minds which difficulties of distance, language and attitudes of mind all tend to prevent. I would end on this final note. The student of the natural history of research encounters time and time again that strange phenomenon of instantaneous enlightenment—that moment of vision, understanding and comprehension which illumines once and for all the mind of the scientist as he grapples with a problem. It found Archimedes in his bath-tub. It seized upon René Descartes one day in the Low Country, when stripping all things else from his mind, he reached the conclusion: "I think, therefore I am." It came upon Blaise Pascal in the agony of toothache, and showed him the mathematical solution to the problem of "La Roulette". It presented itself to Newton in the fall of the apple. It revealed to the great German scientist Kekule, seated one summer evening on the open top of a London bus—the image of the chemical constitution of the aromatic compounds. In the act of placing his foot on the step of a French country omnibus there came to Henri Poincaré, the great French mathematician, the definition of his Fuchsian functions.

May such a moment of illumination come to us, members of the Twelfth World Health Assembly, as we contemplate the enlarged role of our organization in this richly promising field of medical research.

DARLING FOUNDATION PRIZE

The Darling Foundation Prize is awarded periodically for outstanding achievement in the pathology, etiology, treatment, prevention or control of malaria. It was created to honour the memory of Dr Samuel Taylor Darling, an eminent malariologist who was accidentally killed while on mission for the Malaria Commission of the League of Nations.

This year the Darling Foundation Committee decided to make the sixth award of the Darling Medal and Prize to Dr Emilio J. Pampana. The five previous awards were made to Colonel S. P. James (1932), Professor N. H. Swellengrebel (1937), Professor H. E. Shortt and Dr P. C. C. Garnham (1951), Dr G. Coatney and Professor G. Macdonald (1954), and Dr P. F. Russell (1957).

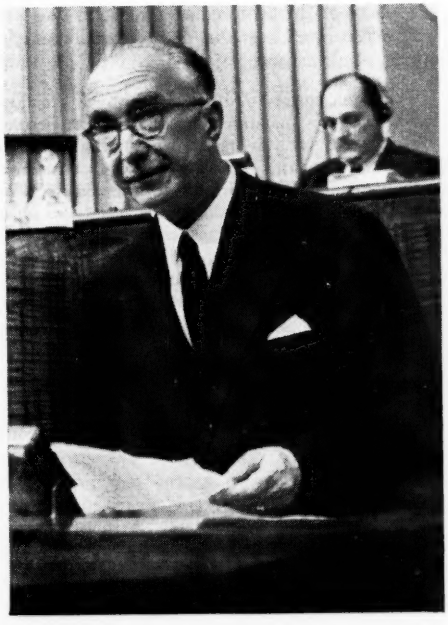
At a plenary meeting of the Twelfth World Health Assembly, the award was presented by Sir John Charles, President of the Assembly, who outlined Dr Pampana's career as follows:

" Dr Pampana was born in Florence, Italy, in 1895. He took his M.D. with honours at the University of Florence and shortly afterwards obtained his diploma in tropical medicine and hygiene at the London School of Hygiene and Tropical Medicine. From 1922 to 1928 he was Chief Medical Officer of mining companies in Colombia and it was during this period that we see the beginning of Dr Pampana's long career in the field of malaria control . . . From 1928 to 1931, he was an assistant in the Institute of Hygiene at the University of Rome, and a few years later was named lecturer of that University.

" Dr Pampana commenced his long association with international health work in 1931 when he became a member of the Health Section of the League of Nations. From 1933 to 1938 he was Secretary of the Malaria Commission of the League. In 1938 he returned to Rome to become Chief of the Department of Epidemiology of the E. Marchiafava Institute of Malariology. From 1943 to 1947 he was Director of the Health Bureau of the League of Red Cross Societies, and in 1947 he joined the Interim Commission of the World Health Organization.

" In 1948 he became Chief of the Malaria Section of WHO, and in 1957 he was appointed as WHO's first Director of Malaria Eradication, an appointment which he held until retiring from active service with the Organization at the end of last October.

" . . . In September 1958, during the Congress of Tropical Medicine and Malaria held in Portugal, he was awarded the Laveran Prize for achievements in research on malaria.



Dr Pampana addressing the Assembly after receiving the award

" Dr Pampana is known and respected throughout the world of tropical medicine and malaria as a man of great and deep technical knowledge and wide practical experience, and as a wise and friendly counsellor always ready to give freely of his store of knowledge and experience.

" Dr Pampana is being honoured today for the personal and original contribution he has made to the epidemiology and control of malaria throughout his long and honourable career."

In his speech of acknowledgement, Dr Pampana expressed his thanks for the honour bestowed upon him and said how greatly he prized the award:

"The Darling Medal and Prize are perhaps the highest award for malaria work and you, Sir, from whose hands I receive it . . . are the President of the highest forum of international health. As I have devoted my life both to malariology and to international health, it is easy to imagine what this day means for me."

Dr Pampana then gave a brief historical summary of the circumstances which had led up to the lauching of a world-wide malaria eradication campaign:

"Many delegates to this Assembly will recollect the situation of malaria control before the Second World War. It was based mainly on antilarval measures. Malaria eradication was, of course, unthinkable; but even nation-wide control was economically unfeasible . . . It was fortunate, however, that in those years general paralysis of the insane was being treated by malaria, because among the new teachings that this technique gave us was that of the limited duration of most malaria infections, and this knowledge was the very base upon which the concept of malaria eradication could be built when the discovery of residual insecticides gave us a nearly universally applicable method to prevent the occurrence of infection. The great effort . . . of the League of Nations to stimulate malaria control in the rural areas of the tropics materialized perhaps at the Inter-Governmental Conference on Rural Hygiene held in Bandung, Java, in 1937. At that time, among the countries of South-East Asia and of the Western Pacific, there was none having extensive programmes of rural malaria control except in industrial or agricultural undertakings, and this Conference was unable to foresee significant progress. The best it could do was to recommend extension of the free distribution of cinchona products, the co-operation of the people in minor control methods and the exploration of cheaper methods of control which require time more than money. Today, only four years since WHO adopted the policy of malaria eradication, nearly all those countries are carrying out or planning to carry out malaria eradication programmes.

"To realize the enormous development that this policy has attained today all over the world is indeed astonishing. But it is clear that an intensification of government efforts, greater international assistance and a further extension of research are essential."

Dr Pampana concluded by reaffirming his faith in the eradication policy which was adopted by the Eighth World Health Assembly in 1955, and again expressed his deep appreciation of the honour done to him.

Sanitary science and health

"A study of the falling death and sickness rates during the past century illustrates either that there is a direct relationship to the awakening which took place in this period in sanitary science, or that both trends have been the result of some common factor, such as marked social betterment. The evidence strongly suggests that there are many direct relationships: for example, in the city of Philadelphia before 1906 the rates for typhoid fever reached heights of between 600 and 700 cases of sickness per 100 000 population. In 1906 filtration was installed in the city water supply and four years later the typhoid case rate had dropped to less than 100 per 100 000 population. The practice of chlorination was begun in 1913 and since that time the annual sickness rate has invariably been below 50. Today it has virtually reached vanishing point."

First Report on the World Health Situation: 1954-1956 (*Off. Rec. Wld Hlth Org.*, 1959, 94), Geneva, p. 8

THE ROLE OF WHO IN MEDICAL RESEARCH

The great achievements of modern medicine have been based on research. In the past research has to a large extent been a haphazard, individual pursuit, brilliantly successful in certain fields, but, for a variety of reasons, leaving other equally promising fields untouched. Today it is being increasingly recognized that research requires fuller organization, not only nationally, but also internationally. The special part WHO can play in the co-ordination of research throughout the world was discussed at the Twelfth World Health Assembly and is reviewed in the article below.

Modern medicine is founded on a tradition of research. But science and technology are advancing so fast in the twentieth century that human society can no longer depend for its scientific progress on incidental discoveries by gifted individual investigators, supported only, if at all, by the meagre budgets of hospitals or universities. Now that the crucial significance of research in the modern technological world is being realized, more public funds are being made available, research has become the main occupation of numbers of people, and talent is being actively sought and developed. This has required much organized effort, and, as the volume of public funds for research has increased, research institutes with full-time staff and, in due course, central national research organizations have come into existence.

Central research organizations now exist in approximately thirty countries throughout the world, and, although at different stages of development, they have some essential features in common. One of their main tasks, wherever they are, is to guide and assist national research without restricting the freedom of the individual investigator upon whom success in research depends; and this they do, not by supplanting, but by supplementing, the functions of universities and research institutes. Ample evidence of their usefulness is furnished by their record, and by the steady increase in their numbers.

As national research has gained in momentum an important new fact has emerged. Great though any national research effort may be, there remain research problems which cannot be solved within the national boundaries of any one country. And yet the keys to some of the greatest health problems of mankind may very well depend upon their solution. Some problems require exploration in particular geographical regions or climatic conditions, or among people of different races, living perhaps in special circumstances. Co-ordinated research in different parts of the world, international team-work, and a more efficient exchange of information are required to fill essential gaps in our knowledge.

In its early days WHO's attention was directed principally towards assisting governments in the control of selected—mainly communicable—mass diseases, although it had in addition certain central functions of public health importance, mostly inherited from its predecessors. However, the problem of research inevitably emerged early in relation to control of these diseases. Scientific knowledge was not great enough to assure the success of control programmes; invariably there were deficiencies in methods or in tools, and in order to remedy them the experimental approach had to be adopted both in the field and in the laboratory. WHO thus had to undertake what might be called operational research, of direct application to its disease control programmes. Very soon, however, it found itself obliged to initiate and support research which may be regarded as fundamental, though here it must be stressed that the distinction between

fundamental and applied research is an artificial one, each merging into the other. Limited as its research activities have been, WHO has nevertheless developed effective co-ordination and assistance methods which have met with the approval of governments and scientists throughout the world. In recent years more and more scientists have sought WHO's support for their work, even when it has not been directly connected with WHO programmes.

The Eleventh World Health Assembly requested the Director-General to study the role of WHO in research, and ways in which it might assist more adequately in stimulating and co-ordinating research and developing research personnel. Accordingly, two groups of world authorities in the medical sciences were convened in Geneva, in August and in October 1958, to study the role of WHO in medical research. Their views were reproduced in a report to the Assembly. The first group reached the conclusion that:

" WHO has an important part to play in, and a great responsibility for, the development and dissemination of scientific knowledge on a world basis. In this it supplements national organizations and philanthropic institutions.

" The research programme of WHO should be primarily concerned with

(i) the solution of those problems which are better resolved by world co-operative endeavour than by local groups;

(ii) the solution of major problems when local effort is inadequate whether by limitations of the research potential of the area or by the nature of the problem."

WHO's objectives should therefore be to stimulate and initiate new research and to promote, organize and co-ordinate existing research by:

"A. supporting the expansion of work in special world health problems (as exemplified by current and contemplated WHO programmes on special diseases, wherever the problems may exist and wherever the opportunities may be found to solve them);

B. advancing the development of medical research generally, particularly through the support of individuals and through the advanced training of research workers and primarily in areas where medical research is in the early phases of development."

These objectives may be implemented in the following ways:

"A. training of research personnel including supervisory technicians;

B. exchange of established scientists; improving contacts among research workers; assisting countries in developing their research organizations;

C. assisting in the planning of research programmes and research institutions; and in developing methods of research particularly applicable to world health problems;

D. giving aid in medical research or emergency research assistance by means of subsidizing research in the form of personnel, equipment or grants."

The second group " whilst recognizing the fruitfulness and high development of medical research in many countries . . . was convinced that there were many important problems which could only be approached on the basis of international collaboration, many which could be solved more expeditiously by combined effort, and that there were a variety of services, centring upon the standardization of materials, techniques, definitions and terminology, which were essential to scientific progress but which could only be secured through action on an international scale."

This group accepted the position that in research, as in other fields, WHO would seek to act through existing national organizations. " But there were many countries where national research organizations either did not exist or were inadequate and others where they were not developed, either in part or in whole, up to their fullest possibilities. If the potentialities in the world for medical research were to be increased to meet the need, WHO could not remain indifferent to these shortcomings; and it would be a necessary supplement to any endeavour by WHO to promote and encour-

age medical research through the world, to seek either directly or indirectly to remedy these deficiencies. This would inevitably involve consideration of training programmes for research workers and the provision of adequate facilities by countries for workers so trained.

" But if WHO is to assist effectively in the development of medical research in a world-wide context, it can only do so on the basis of a well thought out and reasoned policy and suitable machinery for necessary executive action."

Some guiding principles

In the last analysis, the report states, " research is the expression of activity in an individual mind and it is not until ideas have developed to a certain stage that their co-ordination becomes possible. Therefore, whilst WHO should maintain a keen interest and encourage the organization and early development of knowledge in national centres for medical research, the main role of the Organization would come after the stage at which ideas originate.

" It has always been a basic principle of WHO's work to operate through existing national organizations. This principle applies with particular force to research. It would be mistaken for WHO to duplicate the work of existing national centres for medical research by creating international centres for such work. Its role should rather be to encourage the highest possible development of national centres and to use these as the bases on which to construct a world-wide co-operative effort in those fields where progress depends upon such co-operation.

" It would, however, be unrealistic not to recognize that in the world at this present time the distribution of medical research varies widely. In some countries it is highly developed in both quality and quantity; in others it hardly exists; and in many more its development, even by existing standards, is incomplete. It is evident that, if the full potentialities for research in the world are to be exploited, it will be necessary to encourage and stimulate all countries to overcome any shortcomings in their efforts. The World Health Organization is, by reason of its unique status and potentialities, favourably situated to do this; national governments might accept its advice on the most profitable deployment of their research resources and the need to remedy inadequacies in their research organization when they would be reluctant to accept it from any other body. To this extent, therefore, the World Health Organization has an important, although indirect, role to play in the promotion of individual—as distinct from international—research programmes.

" The means by which WHO could achieve this end would necessarily vary according to the state of development of medical research in the particular country. In many, advice would be sufficient; in others some form, either direct or indirect, of supplementary support would be required; in yet others it might be necessary to initiate the necessary developments by providing appropriate teams of experts. In general, however, support might not be necessary on a massive scale. Experience has shown that even modest supplementation of existing resources often produces returns out of all proportion to the sums invested, if these be judiciously placed.

" The extent to which WHO should concern itself with basic research is an important matter of principle. Practical experience has shown that, however utilitarian the aim of a research programme, progress was frequently arrested by lack of basic knowledge. It has, therefore, to be recognized from the outset that any extended programme of research will inevitably involve the Organization more and more in basic problems, and that it cannot remain indifferent to their solution. From the very nature of the case the need for such basic knowledge cannot be accurately forecast; it can only be revealed as the research unfolds. WHO must, therefore, be prepared to take a liberal view in judging the relevance of any proposals for research, and not allow its activities to be restricted by any set of rigid rules which limit either the fields of research which it can aid, the approach to be adopted, or the

extension of the programme that is permissible. One of the important functions of the scientific advisory body which has to support any international research effort would be to advise on the extent to which it was justifiable to become involved in basic research in relation to any particular research programme.

" The duration of research support is another important consideration. If WHO is to extend its research activities into fields where knowledge is relatively little developed, it will inevitably become more involved in long-term work. For example, years must elapse before the genetic effects on man of low levels of exposure to ionizing radiations are elucidated; and the same is true of many problems of virus research, cardiovascular disease and cancer. For this reason it will be necessary for WHO to ensure, either directly or indirectly, that support for such research is on a stable long-term basis, but apparatus and material facilities should only be supplied to places where there are men who can use them. "

Types of research requiring international organization

" It is evident that if collaborative work of any kind is to be undertaken on a world-wide scale it is essential to ensure that the workers in different countries shall agree such conventions as will enable them to communicate their knowledge to each other... It is therefore a primary task for WHO, in whatever field of medical research it chooses to operate, to promote the standardization necessary to allow reliable communication of knowledge and experience.

" ... Certain types of research problems emerge for whose solution international collaboration is either essential or highly desirable. The following broad categories can be distinguished:

" 1. For certain problems world experience is the unit of knowledge. In this category are included demography, the genetic description of populations, the measuring of the incidence and prevalence of disease and the characterization of the range of environmental factors both natural and artificial. For many such problems methodology is rudimentary or non-existent.

" A sub-division of these categories includes those problems which, although not world-wide, can only be fully comprehended on a broad regional basis. Examples of these are conditions such as kwashiorkor and problems common to all tropical countries.

" 2. Communicable illnesses which are distributed either on a world-wide basis or common to large regions of the world require a collaborative approach. In the former group fall many virus diseases and conditions like tuberculosis; in the latter, diseases like malaria.

" 3. Contrasting experience is one of the most fruitful stimuli to new thought. Unexplained variations in the incidence and prevalence of disease, the comparison of health and illness in contrasting environments and in different economic conditions have often provided the key to basic knowledge.

" In such fields as cancer, coronary thrombosis, hypertension, rheumatoid arthritis and diabetes mellitus the existence of such contrasts is known and urgently requires exploration before, owing to the rapid evolution of cultures in different parts of the world, the contrasts at present evident disappear and the opportunity is lost.

" An important sub-division of this category is that which leads to the study of a condition prevalent in one part of the world which is relevant to a different condition prevalent in another. A study of certain cardiomyopathies prevalent in Africa might provide a unique means of studying problems of heart muscle metabolism of importance elsewhere.

" 4. In the advancement of knowledge, the importance of an investigation cannot be measured by the commonness of the condition to which it is directed. Often investigation of a rare condition has illumined a whole field of thought and had practical effects far beyond its immediate application.

" Many genetically determined conditions are of this nature but it is only by bringing together world experience that a sufficiency

of cases of any one can be accumulated to provide effective study.

" A rare kind of pulmonary hypertension has been reported in populations living above 4000 metres. Its study might throw light on the mechanism of pulmonary hypertension in general.

" 5. As well as rarity of opportunity there is also rarity of skill; and there are many examples where knowledge has remained indecisive for unnecessarily long periods because those who could have solved the problem expeditiously, had they combined their efforts, have continued to work in isolation.

" The most evident example of this type of problem lies in the evaluation of special techniques or therapy. Often there are only one or two centres in the most advanced countries where such a technique is available; but in each the opportunities for its use are limited, or the technique is so exacting that it cannot be widely employed. If, however, those competent in its use could combine their experience, it is probable that a definitive assessment could be obtained in a very few years when otherwise it might be delayed indefinitely. It is not only in technique that such co-operation should be promoted: there are equal opportunities in the field of rare intellectual skills.

" 6. Lastly, there is the need for international co-operation that arises not from the scientific nature of the problem, but from the absence of the necessary research resources in the countries where the problem is found. Many of the opportunities for and conditions requiring investigation which were considered occurred in such countries. In these circumstances, assistance from other nations either in manpower or facilities, or both, is necessary. This could be arranged through the agency of an international organization like WHO.

" In broad outline these categories summarize the fields to which WHO as an international organization for medical research might direct its attention. Most of them take their start from an identified practical problem but this should not obscure the fact that each will lead to problems in basic research which must be solved before the research can come to fruition in practice. Just as the malaria control programme has already led to basic work, a study of pulmonary hypertension at high altitudes, for instance, will lead to basic studies on the control of blood pressure in the pulmonary circulation. The promotion of epidemiological studies on a world-wide scale will raise basic problems in methodology. The need to adopt a liberal but judicious policy in supporting basic research is therefore, as already mentioned, quite apparent. "

Feasibility of research

" The recognition of the existence of a problem does not necessarily imply that research can usefully be undertaken upon it. Effective research is possible only on the basis of an objective and scientific assessment of the feasibility of research in any particular problem. For the purpose of providing WHO with such an assessment the advisory mechanism has to be devised accordingly.

" In making such an assessment the first task is the analysis of the practical need into its component problems and the definition of these as precisely and scientifically as possible. Consideration should then be given to the relative suitability of different existing opportunities for carrying out the work and the availability of trained men, material and equipment. The need to provide any supporting services or to relate the research to any existing institution should be taken into account. Only on the basis of such an objective analysis of the situation is it possible to form a judgement as to whether WHO would be justified in giving any particular proposal its support. "

Servicing research

Not only is there a need to standardize nomenclature so that research workers throughout the world may be confident that when the same term is used the same meaning is conveyed, but there is also a need to standardize definitions of disease, techniques and materials.

Standard materials are necessary in many fields: standard antisera, for instance, for the uniform identification of bacteria and virus strains, standardized strains of animals for genetic work, or standardized tissue culture media and standard cell strains grown in tissue culture. The supply of these must be ensured if research is not to be hampered. It is suggested, not that WHO should directly supply them, but that it should endeavour to arrange for them to be supplied.

Allied to the need for standard materials is the need for reference laboratories in special subjects. Some of these have already been considerably developed by WHO in the field of microbiology, but the system is capable of wide development, and at present is much needed in virology, where it is impossible for workers in the field to identify in detail the numerous virus strains they encounter.

A further service that is required is the dissemination of knowledge. To a considerable extent WHO provides this already, but if it is to become more deeply involved in research it will need to expand this service.

Lastly, WHO might pay attention to instrument design.

Training of research workers

If medical research is to be furthered, more men must be trained to become medical research workers. "But training by itself is not enough. There must also be increasing provision for the subsequent careers of men so trained; an adequate number of posts for them to occupy, and adequate facilities for them to work with. Great importance is attached to this consideration. If it is neglected the training programme will fall short of achievement, and frustration and waste will result."

The problem of training is primarily one for the country concerned. The role of an international agency is confined to assisting individual countries when necessary. "Despite the fact that countries [which have no universities and poor secondary education] cannot in the nature of things yet be a source of medical research workers, it was felt that steps could be taken to initiate developments. Often the first step has come from placing a research team in the country. Such teams necessarily recruit local people and often these can be trained as technicians. Gradually the need for education becomes apparent and the value of research appreciated. In this way the setting up of a research team or small institute in a backward country may be an effective way of initiating not only research, but also medical education."

Communication in the research field

The communication of knowledge and experience between scientists, either by the printed word or by personal contact, is an essential feature of the process of research. WHO would not concern itself with promoting large international conferences, whose value in research is dubious, but with organizing small meetings, whose purpose would be not only to elucidate problems on which immediate action was required, but also to provide WHO with a continuous flow of assessments of the situation in fields of research which might sooner or later lead to action. It would be worth while sending one or two recognized world authorities to regional or inter-regional meetings, but they should not be obtrusive; the essence of these meetings is the interchange of views between local people. This type of group meeting is particularly valuable to countries where research workers are few and conditions special.

Senior research experts of wide experience would be needed to tour regions, visit laboratories and universities, meet, personally and informally, the people actually engaged in research, and form firsthand opinions on local problems and needs. Through such visits contact would be maintained with the worker in the field, local morale would be strengthened and local talent perhaps brought to light.

Other types of visit have as their object the carrying out of a specific piece of work. First, there are the visits by senior men of

the rank of professor or assistant professor, to work for a period of six months or so in a department in another country, not only collaborating in research but perhaps also participating in teaching. Second, there are the visits by younger men for longer periods, the object being to bring together for research two or more workers who have a highly specialized interest in common. Lastly, there are the visits of teams of experts to establish some special line of research, with a view to its being taken over by the country visited and put on a permanent basis.

An international research organization might assist in the publication, and perhaps translation, of scientific data urgently needed but either not widely available or not assembled in a comprehensive form; or in the production of needed monographs appealing only to a limited audience. One of the problems facing science is to purvey information in a manageable and assimilable form, to devise expeditious methods of reference to existing knowledge, and to overcome difficulties of language. This problem would have to be tackled by WHO.

The advisory function of WHO

Just as most national central research organizations act in an advisory capacity to their governments, WHO, it may reasonably be assumed, might in due course also develop advisory functions if it could offer a comparable structure at the international level.

Expansion by WHO in the field of international research will require, in addition to the existing advisory mechanism, a scientific advisory committee to keep medical research and research strategy as a whole under constant scrutiny. This committee would receive information on the research problems, developments, and resources of different countries. On the basis of this information and of suggestions or reports received, it would recommend to the Director-General fields of research that might profitably be explored, advising, not only on the desirability of investigating a particular problem, but also on its scientific feasibility in terms of available resources of trained manpower and material, and on priorities in research as a whole. It would assess the progress of research sponsored by WHO, and—most important, perhaps, of all—it would try to detect gaps in the research effort. Lastly, it would from time to time produce a report putting the programme into perspective against the background of need, opportunity and developing knowledge, and attempting to indicate the direction in which further development might fruitfully take place.

This advisory committee would have to contain a representative variety of medical skills and experience, so that as a whole it would review each problem comprehensively. In the selection of its members, personal ability, merit and qualifications would therefore be the overriding considerations. Such a body might be composed of a chairman and fifteen to twenty members and serve for, say, four years, with membership staggered so as to provide for the retirement of five members each year.

If a proposal for research in a field where knowledge was reasonably well developed came to the advisory committee, it would usually be possible for it to advise immediately on whether the proposal was worth supporting, and on what kind of arrangement would be required to ensure that it was carried out and integrated with existing research programmes. But if a proposal were received for research in an as yet ill-developed field, or the suggestion were made that such a field should be examined, this procedure would not suffice. In such circumstances it is likely that the advisory committee, once it had decided that a subject required examination, would advise the Director-General to convene an *ad hoc* group of scientists to assess current knowledge in that field, define as precisely as possible the problems to be solved, identify those open to investigation, and recommend where research should be undertaken. On the basis of the group's report the advisory committee would advise if action was desirable, and, if so, how it should be undertaken.

The plan for research

The report to the Assembly on WHO's role in research contained also a research plan, largely based on the recommendations of a score or so of scientific groups [1] on a wide variety of subjects, from anaemias and antibiotics to vaccines and virus diseases.

This programme of intensified research was discussed at length in the Assembly Committee on Programme and Budget. The Director-General of WHO, introducing the report, suggested that, to ensure continuity, the office of chairman of the advisory committee should be of a more permanent nature than that of chairman of an expert committee. WHO's approach to the whole question of research, he felt, should be flexible and gradual, as befitted an incursion into a new field of enormous extent.

Various delegations feared that the new programme, if adopted, would mean the diversion of resources from such priority projects as malaria eradication; some thought that the programme outlined was as yet too large and not yet defined adequately enough to warrant the addition of a large sum to the regular budget; and the composition, chairmanship, and functions of the proposed advisory committee also met with some criticism. But the general principles governing WHO's role in research, as outlined in the first part of the report, were accepted as a sound guide to the extension of its activities in that field. The Assembly decided that the plan presented for research constituted a logical continuation and extension of established WHO activities. More extensive international co-operation among the research workers of the world was required to prevent, control and cure disease. There was a worldwide shortage of qualified scientists, and the general research potential of the world needed to be increased. WHO had an important role in increasing this potential, and in fostering international collaboration among scientists of the world by stimulating, coordinating, promoting and supporting research. The Assembly therefore approved the plan in principle. It decided that an Advisory Committee on Medical Research should be established; requested the Director-General to report on the research priorities and plans proposed; added $500 000 to the 1960 budget for the purposes of the medical research programme; and set up a special account for medical research—into which voluntary contributions could be paid—to supplement the provision under the regular budget.

[1] The following meetings were held in this connexion: First Meeting on General Medical Research Planning (August 1958); Scientific Group on Research in Iron-Deficiency Anaemia (October 1958); Second Meeting on General Medical Research Planning (October 1958); Scientific Group on Virus Research (November 1958); Informal Meeting on Arthropod-Borne Viruses (November 1958); Informal Consultations with Specialists in Comparative Medicine (December 1958); Study Group on Immunological and Haematological Surveys (December 1958); Scientific Group on Research in Insecticide Resistance and Vector Control (January 1959); Consultant Group on Cancer (Jan.-Feb. 1959); Scientific Group on Tuberculosis Research (Jan.-Feb. 1959); Scientific Group on Research in Bilharziasis (Molluscicides) (February 1959); Scientific Group on Leprosy Research (February 1959); Scientific Group on Trachoma Research (March 1959); Scientific Group on Research in Nutrition (March 1959); Scientific Group on Research in Vaccines (March 1959); Scientific Group on Research on Birds as Disseminators of Arthropod-Borne Viruses (March 1959); Scientific Group on Research in Cardiovascular Diseases (March 1959); Scientific Group on Cancer Research (March 1959); Scientific Group on Research in Human Genetics (April 1959); Scientific Group on Research in the Treatment of Radiation Injury (April 1959); Scientific Group on Research in Antibiotics (May 1959).

The economics of sewage disposal

In England and Wales, the average cost of drainage services to the individual is 11.5s per year or no more than that of one cigarette or newspaper a week; [1] this small sum pays for the treatment and purification of no less than 50 tons of polluted liquid and half a ton of highly putrescent sludge. Yet it is on these services, costing less than one six-hundredth part of the national income, that the health, prosperity and cultural level of the large urban communities—and indirectly of the rural communities—depend. In short, the ultimate benefit is out of all proportion to the expenditure.

[1] Townend, C. B. (1959) *Bull. Wld Hlth Org.*, **20**, 535

ENVIRONMENTAL SANITATION

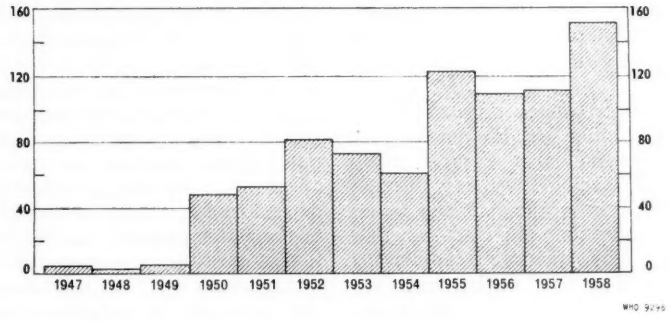
The First World Health Assembly gave high priority to environmental sanitation, listing it as one of the principal health problems of the world, along with malaria, tuberculosis, venereal diseases, maternal and child health, and nutrition. It has thus been one of WHO's main concerns since its inception. Ten years after WHO's establishment, the Eleventh World Health Assembly requested the Director-General to review the Organization's work in the field of environmental sanitation, with particular reference to the provision of potable water supplies and the adequate disposal of human waste, and to submit this review to the Twelfth World Health Assembly, together with such suggestions or proposals for further activities in this field as might seem to him to be desirable, including ways and means of financing the work. The article below summarizes the Director-General's review and proposals.

The WHO staff engaged on environmental sanitation increased from 1.3 (expressed in man-years) in 1948 to 100.8 in 1958; of the latter, 25.9 were engaged on sanitation field projects. The greater proportion of this staff is used on combined projects, since WHO emphasizes the team approach to public health problems. Out of a total of 34 environmental sanitation projects launched by WHO, 19 have consisted of demonstration areas, 8 have sought to develop sanitation activities in national health agencies, and 7 have been teaching and training projects. As in so many other fields of public health, there is a severe shortage of qualified personnel in most countries. Recognizing this, WHO in the period 1947-1958 awarded 807 fellowships to environmental sanitation staff for observation and study abroad (see figure). Its teaching and training projects have included courses for sanitary assistants, schools for auxiliary health personnel, and degree courses for sanitary engineers.

WHO has also sought to disseminate knowledge of environmental sanitation by publishing many technical articles and reports,[1] and by convening expert committees: in 1958 there were 14 expert committee meetings on subjects related to environmental

[1] See: World Health Organization (1958) *Publications of the World Health Organization 1947-1957 : a bibliography*, Geneva.

NUMBER OF FELLOWSHIPS IN ENVIRONMENTAL SANITATION, 1947-1958



sanitation, dealing with such diverse topics as air pollution, water fluoridation, insecticides, and milk hygiene. Much use is made of consultants, who visit countries as experts and help introduce new ideas and endeavour to broaden the outlook of governments on sanitary matters; and of study groups, seminars, and other meetings, which bring together people for the dicussion of problems of mutual interest. WHO collaborates in this field with other intergovernmental, international non-governmental and national agencies; not only with the public health authorities, but also with the public works department, the irrigation department, agricultural agencies, and housing authorities.

Is there any incontrovertible evidence of progress in environmental sanitation as the result of WHO's work? Statistics of diarrhoeal diseases, which might be expected to show some improvement *pari passu* with improvement in environmental sanitation, show no striking reduction in the incidence, and are indeed the reverse of gratifying. In many countries these diseases still occupy the first or second place among the causes of death. Deaths from dysentery are still alarmingly high, and unfortunately show little change from year to year in a large number of areas. The outbreak of cholera in 1958 in India, Thailand, Nepal and Pakistan is a grim reminder that the control of epidemics like this, dependent as it is on environmental sanitation (and in particular on protection of the water supply), still leaves much to be desired. Great strides have been made in the control of insect-borne diseases, but there are still many parts of the world which are far from being rid of the great scourges of malaria, typhus and yellow fever.

WHO has devoted much time and effort to developing public health engineering units, on the ground that a great many pressing problems can be solved only through their use. Progress in the past ten years, however, is no more than fair, and—whether because of low pay, unattractive prospects or lack of trained staff—is far less than was hoped for. Nor do the pilot or demonstration projects provide much evidence of progress. WHO hoped that they would set an example that would quickly be imitated elsewhere, and so exert a widening influence on the country's attitude to, and practice of, environmental sanitation. Far from this occurring, their effect even on adjacent populations has been limited.

On the credit side, it may be said that much has been done to train personnel at various levels, one method, that of holding courses to upgrade personnel already in employment, having been very successful. The seminars and conferences have aroused much interest, opened new and stimulating vistas, and led in many cases to action. The technical publications have provided workers everywhere with valuable guides and information of sound scientific quality. And some of the results of collaboration have turned out well. In North Borneo, for example, where WHO co-operated with the public works department on sewer construction, not only have the sewers been built, but the department has been left with a number of people whose newly acquired experience will enable them to do this kind of work better in the future.

The future programme

Does this record indicate that WHO's action in the field of environmental sanitation was undertaken on too broad a front, with a consequent dispersal of interest and incentive ? The report comes to the reluctant conclusion that it does, and proposes a more limited objective for the future. A satisfactory programme should fulfil most or all of a number of criteria: it should be of ready appeal; require the minimum amount of time and energy for its promotion; give a more than reasonable expectation of being easily and promptly carried out; confer the greatest possible advantages in terms of public health, comfort, and economic return; affect the largest possible number of people; depend to a major extent upon the resources of the people; require as little health education as possible; and need little or no additional research. Of all environmental sanitation activities the only two which meet all

these criteria are community water supplies and community sewerage, and the former, the more dramatic in its appeal, is put forward as the spearhead programme WHO should pursue for the next ten years. In some countries, in which the geology and topography do not favour satisfactory drainage, provision for surface drainage and excreta removal will have to be made simultaneously. But it will often be found that sewerage systems and other environmental sanitation services will, as they have done in the past, follow the provision of water supplies. Where water supplies and sewerage systems exist and are firmly established, other objectives must take their place: for example, stream pollution abatement, sewage treatment, food control or air pollution control. Even in advanced countries, however, large sectors of the population lack an abundant water supply of safe quality, not only in rural areas, but also in urban areas, often of large size.

It is often stated that local financial resources are not available for the provision of community facilities like water supplies. This is frequently not so. It will be necessary to encourage the use of these resources where they exist, and, in doing so, to stress that what chiefly counts in a major capital investment is not the amount of capital sunk, but the annual interest and amortization charges, which are often small and easily met.

A public water supply is more than a social benefit, it is also an economic and industrial asset; the greater part of its cost should therefore be considered as an investment in the development and productivity of the community. The funds required can be obtained by a variety of methods, and successful examples adapted to local conditions are to be found in the Americas, in a number of western European countries, and in some parts of the Eastern Mediterranean and Western Pacific Regions. WHO could diffuse knowledge of these methods, which might well provide valuable precedents. Indeed, it has already made a start: an expert is preparing a manual on the organization and financing of community water supplies.

It should be remembered that the cost of water delivered by pipe to a consumer in his own home is often much less than that of water obtained otherwise, and piped supplies involve none of the hard work of going to fetch water that so often falls to the lot of the housewife. Take the case of a typical consumer living in a suburban area near New York. He pays $18 per year water rate for his family, which works out at 1.23 cents per person per day. The average consumption per person is about 400 litres per day. Thus a barrel of water of 200 litres, delivered under pressure into his house and of a very high quality, costs this householder 0.6 cents. Contrast this situation with that of a householder on the outskirts of Bandung, whose wife draws water from a public outlet. In return for a small coin inserted in a meter she gets 40 litres of water. Her coin is worth 0.6 cents, so she pays at the rate of 3 cents per barrel, or five times what it costs the New Yorker, and she must in addition carry the water home herself. In some parts of Bolivia, where water is transported considerable distances by ox-cart to be sold in the villages, and in some of the squatter settlements of Johannesburg, water costs nearly 30 cents per barrel. In these places people do not buy water by the barrel, but by the jugful.

Sanitary engineering personnel would have to reorientate their thinking for the large-scale programme proposed, learning to tread in fields hitherto assumed to be outside their province, laying less emphasis on rural concepts, concentrating on the development of structural organization and machinery, and being prepared to spend much time on financial matters.

In an assessment of the scale of a water supply programme in the Americas, it was estimated that 80 000 000 people in that region live in community aggregates which need domestic water supplies, and that the cost would be some $4 000 000 000. If the situation in this region is typical the cost throughout the world would amount to some $25 000 000 000. External financing would probably be needed only for about half of this, the proportion varying from a

quarter to three-quarters in different communities; and a system of revolving funds would seem to be necessary. With revolving funds totalling $1 000 000 000 accumulated over eleven years, it is estimated that in the first ten years 20 140 communities could be benefited; thereafter 1200 new communities each year for an indefinite period.

The programme could be carried out in various ways, and would obviously not conform to the same pattern everywhere. Generally, however, it might be expected to consist of survey, planning, financing and design and construction phases. In the survey phase WHO could assist governments by supplying consultants, either singly or as a team. The planning phase would normally require more than short-term consultation; in the larger projects the engineering planning, for example, might be done by established and experienced engineering consultation firms. WHO could aid governments either by employing, or assisting in the employment of, the necessary consultants, whether legal, fiscal or engineering. So too in the financing phase it could supply or help supply expert advisers with experience in administration, and in the planning phase furnish technical advice to the designing engineers.

WHO would also make use of such well-tried procedures for furthering the programme as seminars, expert committees, field visits, manuals, documentary aids, training courses, illustrations of successful procedures and standard specifications.

Discussion in the Assembly

Some delegations felt that the Director-General's estimate of WHO's achievements in the field of environmental sanitation had been unduly pessimistic. Some felt that the provision of water supplies by itself would be rendered nugatory unless provision was made at the same time for the disposal of excess water and human waste, since it was unduly optimistic to assume that the one would follow on the other. One delegation stressed that the absence of water supplies in many countries did not signify any lack of technical ability to provide them; rather did it point to the existence of unworkable legal and administrative systems and unsuitable financing systems, the improvement of which should be part of WHO's future task. The next five to ten years would be spent most profitably if public and private groups in many areas could be persuaded of the feasibility of rapidly expanding water supplies with local and national resources, supplemented by bilateral and international funds. Millions of people could be provided with domestic water supplies if known techniques and accepted fiscal procedures were employed. Another delegation considered it essential that the highest planning authorities in each country should be brought to realize that the provision of an adequate supply of pure water was an integral part, not only of health programmes, but also of any general programme of economic development. Yet another emphasized that the quality of the water supplied was more important than the method of supply.

The Assembly endorsed the principles and programmes set forth in general terms in the Director-General's report, and made various recommendations to Member States. Priority should be given in national programmes to the provision of safe and adequate water supplies for communities. Wherever necessary, national or provincial water boards should be established and given authority to deal with the various legal, administrative and fiscal responsibilities involved in such a programme. All available national and local resources of money, materials and services contributing to such a programme should be mobilized. Within each country a revolving fund should be established to provide loans for water supply development to local agencies. Full advantage should be taken of existing international loan funds.

The Assembly authorized the Executive Board to accept contributions offered for the purpose of assisting governments in developing community water supplies, and requested the Director-General to establish a special account for the purpose. It also requested the Director-General to make adequate provision in future programmes and budgets to enable WHO to maintain leader-

ship in a co-ordinated global programme of community water supply and to provide the necessary technical and advisory services to governments. Finally, it invited all multilateral and bilateral agencies having an interest in that field to co-operate with WHO in carrying out a global water supply programme.

SMALLPOX ERADICATION

Smallpox is a disease eminently suited to a large-scale eradication programme. Although vaccination has been known and practised for over 150 years and is one of the simplest, safest, and most effective measures in the field of preventive medicine, smallpox is still endemic in some parts of the world. On the initiative of the USSR delegation, the Eleventh World Health Assembly in June 1958 requested the Director-General of WHO to report on the implications of a smallpox eradication programme. The article that follows is based on the Director-General's report in answer to this request.

Smallpox is still a dreaded disease in many parts of the world (see Figs. 1 and 2), and in 1958 there were more than 200 000 cases in Asia (see Fig. 2). Normally it is absent from the European region. Cases are introduced occasionally from outside, but the resulting outbreaks are controlled by vaccination and secondary cases are few. Smallpox was mildly endemic in the United States of America before the Second World War, but it

FIG. 1. NOTIFICATION OF SMALLPOX CASES BY CONTINENTS, 1948-1957 *

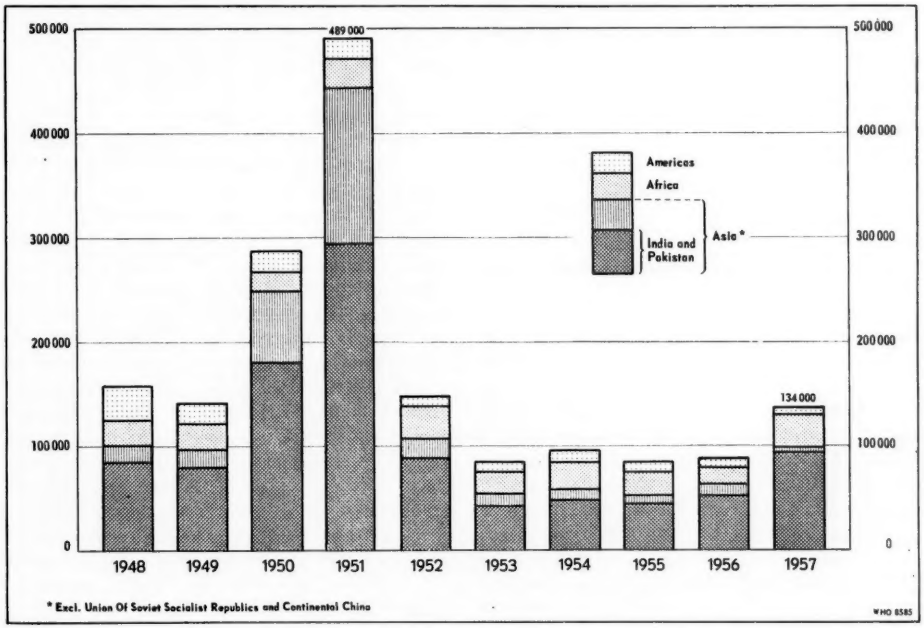
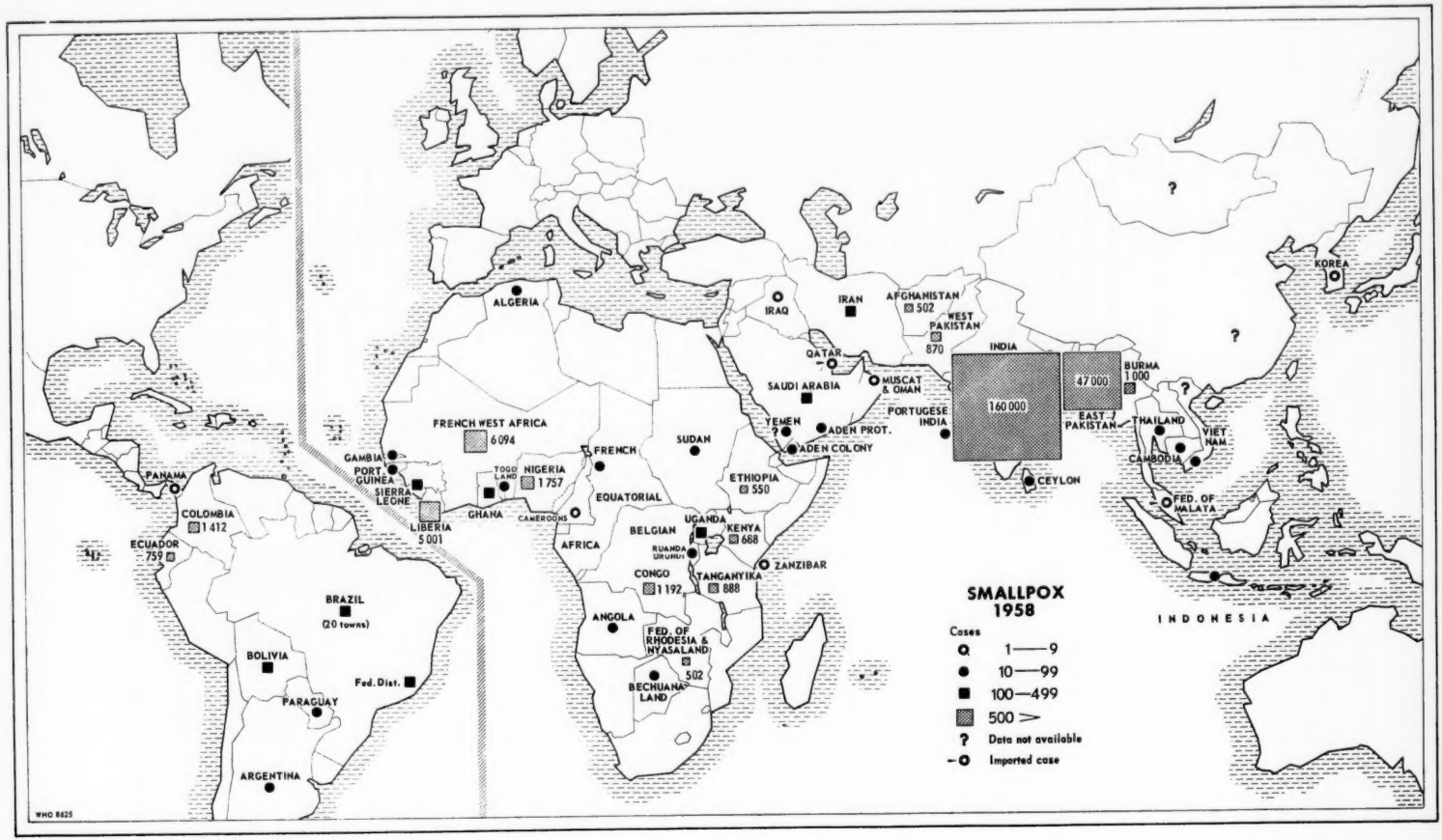


FIG. 2. NOTIFICATION OF CASES OF SMALLPOX IN 1958



was virtually eradicated there during the war years, and no case has been reported since 1953. It used to be heavily endemic in several South American countries, but in most of these the efficacy of planned mass vaccination has been demonstrated during the past few years. In Central America and the Caribbean Islands smallpox has not been prevalent for several years.

India and East Pakistan contain by far the most important endemic foci in the world, and with Burma must be regarded as the most likely source of the smallpox exported to other countries, chiefly in Asia and the Eastern Mediterranean area. The Mecca Pilgrimage, which hundreds of thousands of persons from all over the world make every year, plays a large part in the transfer of infection, but so also do ordinary movements of people by land, sea and air. Numerous international ports and airports are endemic foci (see Fig. 3).

It was estimated in 1937 that, in spite of the strides made in vaccination, less than half the population of India was subject to compulsory vaccination. The exact number of cases of smallpox was unknown, since figures for incidence were not available from the princely states, which then constituted a large part of the endemic area. While the incidence of smallpox in India and East Pakistan appears to have fallen over the past century, there was no sign of a decrease between the years 1954 and 1957. This persistence of the disease is apparently due mainly to the uneven degree of efficiency with which the local authorities, whose responsibility it is, carry out vaccination. Lack of thermostability in the vaccine used must also be suspected, a defect that will be overcome by the use of dried vaccine. It has been proposed that this should be produced locally, with WHO assistance, and WHO has in fact already provided a short-term consultant to advise on local production in institutes in Uttar Pradesh and Madras.

Other countries of South-East Asia report occasional cases of smallpox, but the only other large endemic focus in the region is in Burma.

Since the decline of smallpox in the Americas, Africa ranks next to South-East Asia as an endemic area, the main foci being in the centre and west. Northern Rhodesia and Nyasaland have a fairly high incidence. The Belgian Congo is an important endemic focus, although decreasingly so because of its efficient field medical service; smallpox is also present in Uganda.

The main West African foci are Nigeria and the area known until recently as French West Africa, where the highest incidence has been reported in Dahomey and the Ivory Coast (which adjoin the coast and are at least partly afforested) and Sudan and Niger (which adjoin the Sahara). In Ghana there has not been an epidemic in the savannah area since 1947, but endemo-epidemic cases have occurred in the forest areas. Many pilgrims travel, mainly on foot, from West Africa to Mecca, and there is a constant danger of smallpox being imported into Egypt and the Sudan.

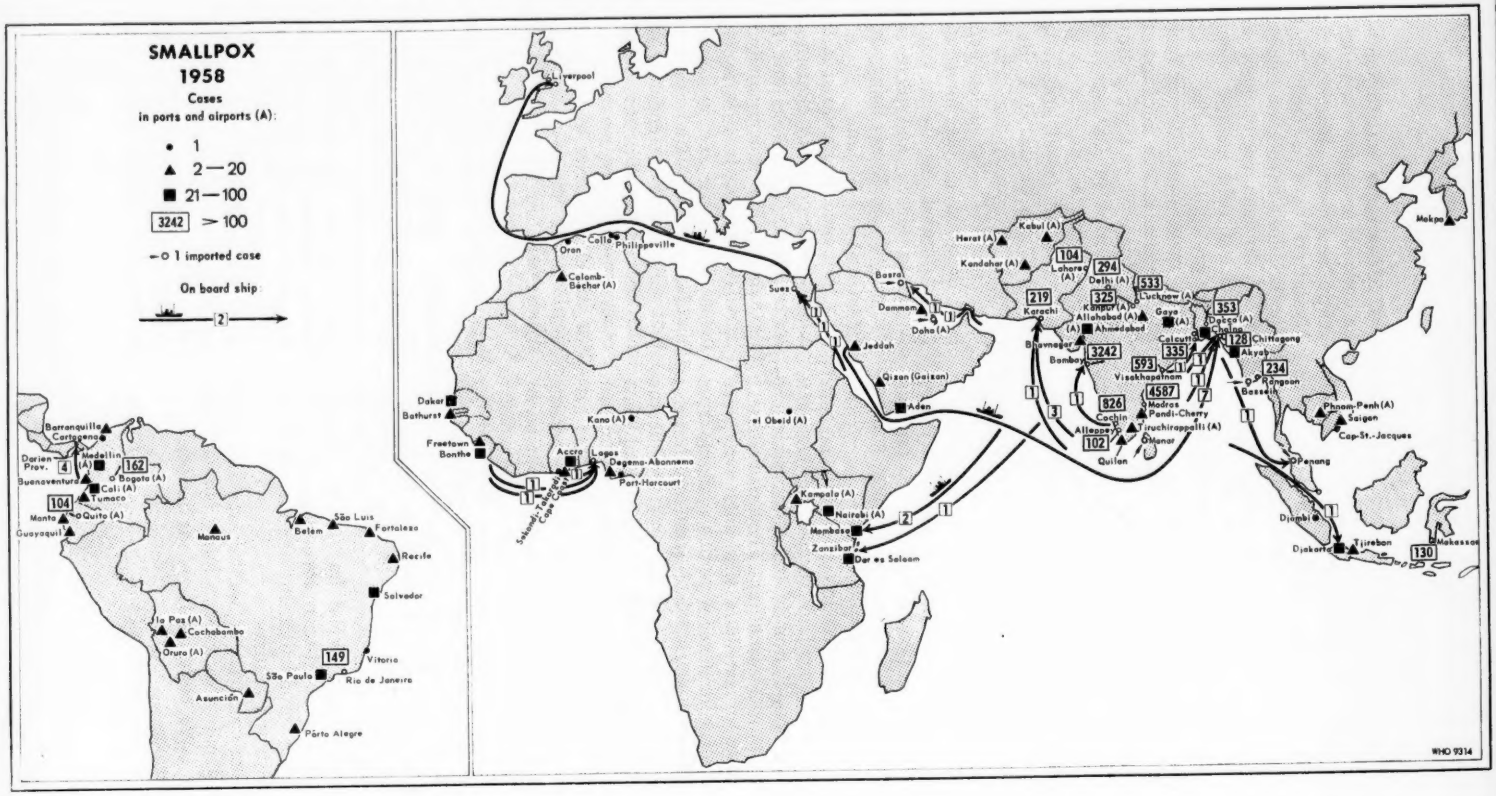
In Iran endemic foci exist in the mountain areas with a cool dry climate, and there is some danger from the long frontier with Afghanistan, in which smallpox has been heavily endemic. In 1954 smallpox was endemic in Korea, and in Cambodia, Laos, Viet Nam, and Thailand. Korea has reported that now it has no endemic foci, and the incidence of the disease is decreasing in the other countries just mentioned. In some of the island territories of the Western Pacific smallpox has not re-established itself since dying out before the war.

The technical aspect of eradication

There is general agreement that smallpox can be eradicated from an endemic area, if 80% of the population is vaccinated or revaccinated within a period of four to five years. The only acceptable criterion of successful vaccination is vesiculation: either primary vaccinia or the accelerated reaction. The precocious non-vesicular reaction known as the reaction of immunity, or immediate reaction, is not reliable evidence of actual immunity.

The amount of vaccine required annually for the eradication of smallpox in a country

FIG. 3. NOTIFICATION OF SMALLPOX CASES IN PORTS AND AIRPORTS, 1958



caused the virus to be carried to Colombia and Ecuador, and from there to Panama and Costa Rica. Other countries in which imported cases were reported were Ghana, Nigeria, Sierra Leone, Liberia, Ivory Coast, Guinea, Senegal, Gambia, Mauritania, Spanish Sahara, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan, Ethiopia, Somalia, Kenya, Tanganyika, Uganda, Zanzibar, Mozambique, Southern Rhodesia, Union of South Africa, Portuguese Guinea, Portugal, Spain, France, Belgium, United Kingdom, Ireland, Netherlands, Federal Republic of Germany, Switzerland, Italy, Yugoslavia, Greece, Turkey, Lebanon, Syria, Iraq, Iran, Afghanistan, Pakistan, India, Ceylon, Burma, Thailand, Malaya, Singapore, Indonesia, Philippines, Japan, Hong Kong, Macao, Taiwan, Republic of Korea, Democratic People's Republic of Korea, Viet-Nam, Cambodia, Laos, Australia, New Zealand, Canada, United States of America, Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Panama, Costa Rica, Cuba, Haiti, Dominican Republic, Jamaica, Trinidad and Tobago, Venezuela, Colombia, Ecuador, Peru, Bolivia, Paraguay, Brazil, Uruguay, Argentina, Chile.

can, and should, be calculated in advance, so that the most economical use is made of vaccine-producing institutions. The amount depends on the population of the area to be covered, the proportion already vaccinated, and the anticipated wastage of vaccine. Climate, communications, and the percentage of the population in rural and urban areas must all be taken into account in deciding the proportions of dried and glycerinated vaccine to be used.

It is believed that for mass vaccination, especially in tropical and remote rural areas, freeze-dried (lyophilized) vaccine prepared by the Lister Institute technique gives the best results, since it remains viable for at least three months at 37°C and for at least eight weeks at 45°C. There is no difficulty in teaching semi-educated and uneducated vaccinators to use it.

The production of Lister type dried vaccine requires high standards of skill and responsibility in the professional and technical staff employed, which must therefore be carefully selected for both qualifications and character. Some countries have experienced difficulty in finding suitable staff. The staff selected must be given fellowships for training. There are at present very few institutions where this type of training can be given.

Although the thermostability of Lister type vaccine is outstanding, dried vaccines prepared by some other processes satisfy the minimal requirement of stability for four weeks at 37°C. Most of the dried vaccine for the successful campaigns in Central and South America was produced by techniques developed in the United States of America.

A highly qualified consultant is required for two to three months to set up a freeze-dried vaccine laboratory. Few such consultants are available at present, and those who are are heavily committed, so that the number of producing units that can be set up each year is limited.

The quality of the vaccine produced must be continually checked, so as to maintain the standards laid down by the WHO Study Group on Recommended Requirements for Smallpox Vaccine. Testing requires skill and time.

One lyophilization unit produces, if all goes well, some 1 500 000 doses of vaccine annually. To do this, a full professional and technical staff, including a highly qualified director, is required. In hot climates an air-conditioned laboratory may also be necessary. Overhead costs per dose will be lower if several units are grouped together, and veterinary and other vaccines may therefore be advantageously produced in the same institution.

In these circumstances WHO assistance, it would appear, should be devoted to setting up a few comparatively large and efficient institutions, rather than many small ones of dubious efficiency.

Glycerinated vaccine lymph will continue to have its uses. If refrigerated storage and transport are available, it offers the advantage of being cheaper and easier to produce than freeze-dried lymph, and of being issuable in single-dose containers.

Post-vaccinal encephalitis

The most dreaded complication of vaccination is post-vaccinal encephalitis, which occurs most commonly after primary vaccination in adolescents and young adults. The reported incidence varies from as much as 1 case to 3000 vaccinations to no cases after several million vaccinations carried out in some countries in South America.

Human immune gamma globulin is under trial in the Netherlands for the prevention of post-vaccinal encephalitis. Results so far suggest the possibility of a successful outcome. In the USSR hyperimmune gamma globulin of very high titre is being produced from animals. This would be easier to obtain than human gamma globulin and the possibility of producing it elsewhere is being examined. Apart from preventing post-vaccination complications, it may be useful for aborting overt smallpox in unvaccinated contacts and for treating cases. The Study Group on Recommended Requirements for Smallpox Vaccine has recommended that gamma globulin be made subject to an international standard.

The best prophylactic against post-vaccinal encephalitis is primary vaccination in the very first years of life.

The smallpox service and campaign

Some countries, such as Indonesia, have a separate vaccination service, but in most a smallpox eradication service will have to be integrated with the general public health service, although it must be directed, or at least co-ordinated, centrally. There must always be someone charged specifically with responsibility for smallpox eradication, both at the national and provincial levels, to ensure that the work is properly done throughout the country.

The work of the smallpox service should include the mass vaccination campaign; a health education drive to explain clearly why the campaign is being carried out; the diagnosis and isolation of cases of smallpox and surveillance of contacts; and all aspects of quarantine. In some countries legislation regarding vaccination will have to be introduced.

A detailed programme of the campaign should be prepared. Technically, a campaign lasting four or five years is ideal, this being roughly the length of time for which successful vaccination confers full immunity. The timing of the campaign should be co-ordinated as nearly as possible in adjacent territories, and should be laid down in advance.

The first stage in building up the smallpox eradication staff must be the recruitment of a directing cadre of ability and enthusiasm, who must have the initiative and drive to carry through the campaign. This directing cadre must be drawn from the country itself, though WHO may provide epidemiologists or laboratory workers as short-term consultants.

Medical supervision of the vaccinators' work is necessary, and there should be sufficient full-time medical officers for any inspector to call one out reasonably quickly in an emergency. The work of the vaccinators must be supervised constantly and strictly by inspectors who are on sympathetic terms with the men under them. It may be hard to find sufficient men of the calibre and integrity required for inspectors. One inspector can usually supervise from seven to ten vaccinators, though the number may be as few as four in a particularly scattered rural area.

Mass vaccination may be carried out from house to house, or at fixed attendance points. The latter method enables the vaccinators to perform more vaccinations per day, but experience indicates that nowhere near 80% of the population attends. The house-to-house method requires greater effort and more intensive work, but ensures a better coverage of the population. This method has been followed in several countries which have already successfully achieved eradication by mass vaccination, and is being followed by other countries at the present time.

It is most important to calculate the average number of vaccinations that one vaccinator can perform annually or daily in the conditions prevailing in his area of operation, since the whole timing and staffing of the campaign depend on this. The average varies greatly: it is only 7000 a year in one rural area in Africa, with individually scattered houses and a long, immobilizing wet season; it is 22 000 and 15 600 a year respectively in two Eastern Mediterranean countries; in South America it is 60-80 daily as a general average; and in urban areas it may be as much as 150-250 daily. The nature of the communications and the type of transport are important factors in the output of the vaccinators.

Vaccination campaigns may, where appropriate, be combined with other campaigns. They combine particularly well with yaws campaigns, as has been found in Haiti and Nigeria.

The task of WHO

For WHO to stimulate and co-ordinate the work of smallpox eradication throughout the world, it must establish contact with all institutions and consultants capable of assisting in this task. There are very few institutions where proper training in the production of freeze-dried vaccine is possible, and these are also the only institutions where the quality of freeze-dried vaccine from WHO-assisted laboratories can be checked.

Moreover, the very few persons qualified to help as short-term consultants in the setting up and periodic inspection of new WHO-assisted laboratories producing the vaccine are likely to be on the staff of these institutions. Careful administrative planning will consequently be needed to use to the best possible advantage the facilities that these institutions may be willing to offer.

WHO must organize training courses in vaccine production centrally, since in this way participants from several regions can be brought together and the maximum use made of the services of the consultant instructors. This will also avoid undue pressure on the institutions to take individual fellows for training. WHO must also organize inter-regional conferences from time to time to facilitate co-ordination of the work in different regions. Epidemiological consultants should be recruited centrally, so as to dovetail short-term appointments of this type and make the most effective and economical use of the experts available.

Financial aspects

It is difficult to present an over-all picture of the financial provisions being made at present throughout the world for smallpox control and eradication, mainly because in many places expenditure on smallpox control cannot be separated from the general public health budget, of which it forms an integral part.

In working out a campaign budget it should be possible to calculate the *per capita* cost of vaccination and apply this to the whole country by cautious extrapolation. This has been done in Colombia and elsewhere. In Colombia a mass vaccination campaign was started in 1955 with the aid of PAHO and UNICEF, and is planned for completion by 1960. The campaign is under the direction of the Ministry of Health, but has its own full-time staff of 3 medical officers, a paymaster, 11 inspectors, 110 vaccinators and 14 drivers. The work is done by mobile teams going from house to house. Motor transport is used, and also horses for the rural areas. The average number of vaccinations carried out by each vaccinator is 60-80 per day, and the average cost is estimated to be about 8 cents (US) per vaccination.

More information will be needed before the approximate cost of eradication can be calculated for most countries, but the following table showing the average cost per vaccination in some countries which have supplied figures is useful as an approximate indication.

Country	*Vaccinations per vaccinator*	*Estimated average cost per vaccination (in US dollars)*
Colombia	60-80 per day	0.08
Ecuador	60-80 per day	0.07
Iran	22 000 per year	0.08
Korea	—	0.08
Peru	60-80 per day	0.10
Philippines	65-80 per day	0.10
Thailand	—	0.075
Venezuela	60-80 per day	0.11

These figures are all based on house-to-house vaccinations, and include the cost of personnel, transport and miscellaneous supplies and equipment, but not of vaccine, which is difficult to calculate but is in any case low.

Discussion in the Assembly

The Director-General's report on smallpox eradication was discussed at length in the Twelfth World Health Assembly. It was pointed out that one of the difficulties in the way of making better use of vaccination was the lack of co-operation on the part of the public. This was due partly to ignorance, especially in the less developed communities; partly to prejudice against vaccination, a feeling that was still strong in certain quarters; and partly to apathy, a marked feature in communities that had not had smallpox epidemics for many years. One delegate said that his country had no statistics for smallpox, but he believed that there might be thousands of cases every year. Vaccination had begun some fifty years ago, but, since an imported wet vaccine was used, roads were few and far between, and transport facilities were bad, its use was confined to a limited area. Many of his countrymen still thought

that smallpox was a punishment inflicted by God, many others that it was due to medicine imported from abroad. Not only were there numbers of people who refused to be vaccinated with imported vaccine, but there were also numbers who deliberately infected themselves with fluid taken from cases, often with disastrous results. He foresaw that it would be a long time before legislation could be enacted to make vaccination compulsory.

The Assembly emphasized the urgency of achieving world-wide eradication, and recommended that the health administrations of the countries where the disease is still present organize and conduct eradication programmes as soon as possible, making provision for the availability of a potent stable vaccine. It also requested the Director-General of WHO to offer the necessary technical guidance and advice; and to provide in his programme and budget for future years for the necessary activities to further smallpox eradication programmes, and for the assistance requested by national health administrations for this purpose.

HEALTH EDUCATION OF THE PUBLIC

Report of the Technical Discussions at the Twelfth World Health Assembly

" Health education of the public " was selected as the subject for the technical discussions held in conjunction with, though not subject to official action by, the Twelfth World Health Assembly. This choice and the excellent participation in the discussions are evidence of the increasing interest of health leaders throughout the world in health education, which is now being recognized as an essential element in any health programme.

Seminars or technical discussions on the subject have already taken place in each of the WHO regions. Health ministries and other agencies engaged in health education in a number of countries participated widely in preparations for the technical discussions at the Assembly.

To facilitate these preparations, a " Suggested outline for use by countries in discussing health education of the public " [1] was sent by the Director-General of WHO to Member States. It was suggested that this outline be used as a basis for discussions of the subject at the national, provincial and local levels, and that summary reports of the views expressed be sent to the Director-General for the use of participants during the technical discussions.

In addition, the International Union for Health Education of the Public agreed to ask its members to take part in preparatory discussions, using the above-mentioned outline, and to transmit reports to WHO. A total of 61 countries and 3 non-governmental organizations submitted reports of the discussions in their respective countries and organizations. But even these figures give only a small idea of the amount of interest aroused and the extent of the preparatory activity. In one small country, conferences using the outline were conducted in all the provinces; subsequently a national conference was held at which the final report for transmission to WHO was prepared. Another country's summary was compiled from 53 reports submitted by local meetings. The report from one of the non-governmental organizations contained separate statements from 31 organizations.

Using the reports which had been received by 1 January 1959, the Secretariat compiled a " Background document based on summary reports received from countries ".[2] This docu-

[1] Unpublished working document A12/Technical Discussions/1

[2] Unpublished working document A12/Technical Discussions/2

ment gave detailed examples of practical approaches to health education and recounted some of the wide variations in practice in different countries in respect of programme planning and operation, training of health personnel in health education of the public, and organization and administration of health education services. It also listed a variety of health education problems on which research is needed.

The document was sent by the Director-General to all Member States for their delegates and was available during the group discussions. In fact, the final section, "Suggested topics for discussion", was used by practically all the groups.

Dr A. Lakshmanaswami Mudaliar, Vice-Chancellor, Madras University, India, served as General Chairman for the technical discussions. He presided over the plenary sessions, and gave general guidance to the Chairmen of the small discussion groups.

A total of 184 people registered for the group discussions, during which eleven working groups spent approximately seven hours each discussing various aspects of health education.

Three well-attended plenary sessions were held: one to introduce the subject, a second at which a lecture on new techniques in health education was given, and a final session at which the reports of the discussion groups were considered.

FIRST PLENARY SESSION

Opening the session, the General Chairman referred to the origin of technical discussions as a feature of the World Health Assemblies. He recalled that, following the Third Assembly, the Executive Board had agreed that it would be desirable to give special attention each year to some important aspect of the general health programme. The first technical discussions, held at the Fourth World Health Assembly, dealt with the education and training of medical and public health personnel. At later Assemblies, the following subjects were discussed: the economic value of preventive medicine and the methodology of health protection for local areas; modern health techniques in the control of tuberculosis, syphilis and the typhoid group of fevers; public health problems in rural areas; the education and role of nurses in health programmes; and the role of the hospital in the public health programme.

The discussions were then introduced by a panel which included a nurse, a public health administrator, a public health engineer, a health education specialist and a WHO consultant, i.e., Miss A. Wagner, Director, School of Nursing, Central School of Copenhagen County, Denmark; Dr G. Arbona, Secretary of Health, Puerto Rico Department of Health, San Juan, Puerto Rico; Mr H. M. Bosch, School of Public Health, University of Minnesota, Minn., USA; Dr V. S. Erchov, Head of Department, Central Institute for Scientific Research, USSR; and Dr M. Derryberry, Chief, Public Health Education Services, Department of Health, Education and Welfare, United States Public Health Service, Washington, D.C.

The first point stressed by the panel was that the success of many public health programmes depends on health education of the public. It was asserted that health education is "the key to the solution of many health problems involved in the humanitarian task of the World Health Organization" and "the most powerful weapon we have in the field of health". Instances were cited where sanitation programmes succeeded because of effective health education, or failed for the opposite reason. It was pointed out that, while the value of fluoridating water supplies is well known and the process presents no technical difficulties, lack of effective health education deprives many people of the benefits of this measure. The success of the new WHO programme for providing piped

water supplies will likewise depend to a large extent on the adequacy of the education that accompanies the sanitary engineering phase of the programme.

The need for careful and detailed planning of the educational side of a health programme was also stressed by the panel. Factors to be taken into account include targets, methods, materials to be used, synchronization of educational measures with the rest of the programme, and evaluation procedures. The following points should be considered: (*a*) extent of the public's knowledge of the subject; (*b*) misconceptions they may hold; (*c*) additional information they may need; (*d*) the best way of making new information available; (*e*) ways of ensuring that new knowledge is being learned and resulting in positive action.

The panel emphasized the importance of participation by all members of the health team in the planning of health education programmes. In this way, all concerned can fully understand their role in the programme and the contribution they can make. Moreover, people who take part in planning a programme generally have a strong personal interest in its success.

The panel members agreed that all doctors, nurses, midwives, and sanitarians and other paramedical personnel have an educational responsibility. The doctor when he advises a patient or meets a group to discuss a problem they share is conducting health education. The nurse, whether giving advice in the home, taking part in a group meeting at the clinic, serving an industrial group, or providing hospital care, has many opportunities for health education, both organized and informal. The sanitarian also has many opportunities for health education in his work. Although all the health workers mentioned have educational responsibilities, they are nevertheless specialists in medicine, nursing, or sanitary science, not in education. It is thus the task of the specialist in health education to contribute to the health team specialized knowledge about educational methods and techniques.

It was stressed that instruction in health education should be included in the basic curricula of schools of medicine, nursing, sanitary engineering, public health, etc., and should continue during in-service or " on-the-job " training.

In the training of personnel for health education work, practical experience of teaching in the home, health centre, classroom, or community is an essential addition to classroom instruction on methods and techniques of health education.

Various methods of co-ordination were mentioned. These included a centralized system of programme development, some type of co-ordinating council, or an informal planning group. Genuine co-operative effort that assists people to understand and solve their own problems was felt to be more important than the method of co-ordination.

The need for fundamental research by the social scientists on the factors influencing human behaviour and particular health practices was emphasized. Some countries are carrying on limited studies in health education but much more intensive work in this field is badly needed.

* * *

Following the panel discussion, the Chairman requested Mr L. Viborel, Secretary-General of the International Union for Health Education of the Public, to report on the recent Conference on Health Education held at Dusseldorf, Germany, under the sponsorship of the Union. Mr Viborel stated that the theme of the Conference was " Health education of children and adolescents ", and attention had been focused on three problems of special importance: co-operation, professional training, and research.

The Dusseldorf Conference stressed the need for more fully developed co-operation between health services, schools, professional bodies and the non-governmental organizations concerned with public health, particularly where the health education of children and adolescents was concerned. It recommended the formation of local health

committees to include members of the various groups and professions participating in health education.

With regard to professional training, the Conference recommended greater attention to health education in medical and paramedical studies, and particularly stressed the importance of health education training for schoolteachers.

The Conference also recognized the increasing interest in intensifying health education research as a means of achieving more effective programmes. It advocated enlisting the collaboration of psychologists and sociologists to assist in developing and conducting research in this field.

In tribute to the work and leadership of the World Health Organization in the field of health education, Mr Viborel said the International Union for Health Education of the Public was proud to participate in the Organization's health education work.

The General Chairman then reminded those present that participation in the discussion groups would be informal and that those taking part would be doing so as individuals and not in any official capacity.

SECOND PLENARY SESSION

At the Second Plenary Session, Dr W. Emrys Davies, Headmaster, Yew Tree Secondary School, Wythenshawe, Manchester, England, Education Officer to the Central Council for Health Education, England, from 1952 to 1956, demonstrated some new techniques used in health education. He showed several interesting visual aids, including: flannelgraphs that may be used to simplify the presentation; drawings to test word meaning; and a revolving cut-out of a ship to illustrate how one's past experiences influence what one sees in a given situation. Some of the main points in Dr Davies' address are given below.

The task of the health worker in his health education effort is to encourage everybody to take that action that will assure the health, happiness or well-being of himself and those close to him. Therefore health education should be judged by what happens to people rather than by the amount of materials used and distributed.

The action that people take is based on a personal decision. That decision depends on a favourable attitude. Hence, in education it is not enough to give people information or knowledge. They must be brought face to face with responsibility for their own health; in other words, they must achieve insight. The learner must share with the teacher in the development of the solution of a problem, that is, there must be participation.

All people are unique personalities with different wants, different capabilities, unique backgrounds of experience, differing understanding of language. Therefore the health educator must know the people with whom he is working. Because words mean different things to different people, it is necessary for him both to check what people understand by what he says and to use simple visual and other means to illustrate the information he provides. Such material needs to be clear, accurate and inexpensive, to be made in the region where it is to be used, and to be tested out with the people for whom it is intended, in order to avoid misunderstanding. In his enthusiasm to convince people of the importance of a health fact the health educator should not use words or visual aids that exaggerate the truth.

In their educational approach health workers should not assume a superior or authoritarian attitude but should behave as partners in the solving of a problem. Suggestions should be made in a way that allows the learner to accept them within his own framework of behaviour. As educators, health workers must maintain their own serenity, and not become involved emotionally.

There are many groups—religious, social, leisure, working, etc.—with similar interests. It is with these natural groups that health educators should conduct group discussions, assisting them to make decisions about their own individual and group health behaviour. Such groups require understanding leaders, who can serve at the same time as partners and advisers to their members.

GROUP DISCUSSIONS

The Chairmen and Rapporteurs of the eleven discussion groups were:

Group 1: Dr B. M. Clark, Deputy Chief Health Officer, Union of South Africa (*Chairman*) ; Dr V. Ramakrishna, Assistant Director-General of Health Services (Health Education), India (*Rapporteur*)

Group 2: Professor G. A. Canaperia, Director of International Relations and Cultural Activities, Ministry of Health, Italy (*Chairman*); Professor Dorothy La Salle, Professor of Physical and Health Education, Wayne State University, Detroit, Mich., USA (*Rapporteur*)

Group 3: Dr H. B. Turbott, Deputy Director-General, Department of Health, New Zealand (*Chairman*); Dr D. A. W. Nugent, Specialist Hygienist, Ghana (*Rapporteur*)

Group 4: Dr J. N. Rodríguez, Directeur of Disease Control, Philippines (*Chairman*); Miss Mary J. Kraft, Health Education Adviser, United States International Co-operation Administration (*Rapporteur*)

Group 5 : Dr C. Díaz-Coller, Director de Estudios Experimentales, Secretaría de Salubridad y Asistencia, Mexico (*Chairman*); Dr S. Haraldson, Medical Officer of Health, Sweden (*Rapporteur*)

Group 6: Professor E. J. Y. Aujaleu, Directeur général de la Santé publique au Ministère de la Santé publique et de la Population, France (*Chairman*); Dr E. Duhr, Médecin-Inspecteur de la Santé publique, Luxembourg (*Rapporteur*)

Group 7: Dr J. Anouti, Director-General, Ministry of Public Health, Lebanon (*Chairman*); Miss Annette Le Meitour, Chief of Publications, League of Red Cross Societies (*Rapporteur*)

Group 8: Dr Robert Yoho, Director, Health Education, Records and Statistics, Indiana State Board of Health, USA (*Chairman*); Mrs Kate Katzki, International Conference of Social Work (*Rapporteur*)

Group 9: Lt-Col. J. Singh, Director-General of Health Services, India (*Chairman*); Mrs Sally L. Smith, International Conference of Social Work (*Rapporteur*)

Group 10: Dr G. F. Amyot, Deputy Minister of Health, Department of Health and Welfare, Victoria, Canada (*Chairman*); Dr Agnes Singendook, Federal Committee for Health Education of the Public, Germany (*Rapporteur*)

Group 11: Dr C. M. Norman-Williams, Chief Medical Adviser to the Federal Government, Nigeria (*Chairman*); Dr J. D. Hourihane, Deputy Chief Medical Adviser, Department of Health, Ireland (*Rapporteur*)

The reports of these groups are summarized below.

* * *

" In my opinion health education is as important as teaching people to read and write," said a member of one group. " In my country people need to learn what to eat, they need to understand the importance of clean water. Who will teach them? "

" I am responsible for organizing health education throughout my country," said another. " Nothing exists. How will I start? On whom will I call to teach the population? On the doctors? On the nurses? On the teachers? Who will co-ordinate the programme? And, above all, who will teach those who are to teach the population? "

A health administrator remarked: " I can count neither on my doctors nor my nurses for the health education of the public. They have no time. I need specialized health education teams."

These are typical of the practical and realistic problems raised during the group discussions.

Those groups which sought a definition of health education were generally agreed that it is more than mere information or propaganda. It is a continuing and active process of learning by experience. It is one of the fundamental public health methods that assist in achieving the goals of a public health programme. It is not a programme distinct from other public health programmes.

Planning and operation of programmes

The groups emphasized the importance of planning as an essential element in effective health education. As one group expressed it: " Planning is the oil which enables the programme to work smoothly and effectively."

Elements to consider in planning include: the importance of the health problem; the economic consequences of the problem; the role of health education in the solution of the problem; a clear definition of the population group the programme will affect; the knowledge, attitudes and behaviour of the

people in this group; local conditions, including customs, habits, religions, beliefs, etc.; a clear statement of objectives, including what is to be taught and to whom; the proper timing of health education in relation to the provision of health services; acceptability of the programme to the community; availability of funds and personnel; possibility of getting support from international organizations. From such data it is possible to make an "educational diagnosis" and prescribe the necessary "educational treatment".

However, it was felt that caution was required on two points. First, over-zealousness in the conduct of health education may result in demands that will overtax the resources of the community, thus causing adverse reactions to the health programme, and destroying the people's confidence in the health authorities; secondly, the health education adviser should take into account the implications for other social programmes operating in the community that may require financial support for their success.

It was generally agreed that all personnel who are to take part in the programme should also take part in the planning. This enables them to determine the contribution they can make. Furthermore, community leaders as well as the beneficiaries of the programme should be asked in advance for their advice. Teachers and other persons in contact with the people form an important health education resource which should not be overlooked.

Several groups called attention to the need for flexibility in planning so that procedures can be varied to take into account differences among communities or unexpected situations that may arise.

Three groups considered the degree to which communities can be led to take health action. The use of legislation was suggested but it was noted that when health laws are enacted there is need for health education to make them more acceptable to the people. One group discussed the use of competition between individuals and social groups. The success of this method in particular areas of the world was cited, but the group observed that there was a potential danger in competition as a motivating force, since it may produce unhappy feelings in some people and the emotional reactions may lead to failure. The group agreed that competition is usually unsound. It might be useful to some extent between institutions or communities, but not between individuals.

The groups were agreed that the methods employed in health education for any group will depend on local factors. No one method can be applied effectively in every circumstance. Practical methods for each situation should be developed by the community with the guidance of health education specialists, if available.

Some of the groups' comments on specific methods are given below:

(*a*) *Surveys.* If these are carried out by the people, they often stimulate both interest and action, but unless local investigation can be followed up by appropriate services the confidence of the people may be lost.

(*b*) *Enlisting key individuals to demonstrate better health practices.* This method is often useful but a thorough understanding of the community is necessary in order to avoid choosing the wrong individual or family as a model, and to prevent jealousies and misunderstandings of the motives for the choice.

(*c*) *Group discussions.* Several reports mentioned the effective results obtained when local groups discussed their problems and made their own decisions about improvements. This method is only useful when the groups meet together naturally, and have common interests and similar problems.

(*d*) *Lectures and formal teaching* were not considered as ideal methods, but where they are used they should be simple, clear, and not too detailed. They are usually most effective if given to groups with a special interest rather than to general groups. Good questions put at meetings can introduce new ideas but it is more effective if they are introduced casually.

(*e*) *Campaigns.* The effectiveness of campaigns in producing any real change in

health habits was questioned. A succession of campaigns should be avoided as the population is apt to become surfeited.

(*f*) *Person-to-person education.* Discussions between the health educator and individual members of the public were recommended as the most effective means of education, as for example in the interviews conducted by doctors, nurses, sanitarians and health education specialists.

A few groups considered types of health education material and their place in the programme, reaching the following conclusions: to be effective, health education materials should not consist of dead museum exhibits, but should show things in a lively way, local colour being added to arouse interest; materials obtained locally for specific objectives and needs usually produce better results than more costly materials produced at a central office; exhibitions are of little interest to urban populations but still retain their value in small centres and rural areas; the flannelgraph appears to be an excellent medium for health education; in under-developed countries radio and films are likely to have a much greater impact than the press; as sufficient time is rarely allowed for testing materials before they are used, such testing should be done among the groups or population for whom the programme is intended.

Several groups felt that the value of materials was not to be measured by their cost. Inexpensive materials properly used should be the aim. By adequate budgeting and judicious selection, a proper balance can be achieved between expenditure on materials and expenditure on the essential task of training people to use them.

There was general agreement that in the planning of health education, provision should be made for evaluation of efforts from the very beginning. Health education activities should be subject to the same degree of critical evaluation as all other activities in the programme.

It was pointed out that a real evaluation of health education is extremely difficult. To evaluate in statistical terms, the objective has to be clearly defined, and units of measurement need to be developed so that results can be checked against the aims of the health programme. What is particularly difficult in the evaluation of health education is to determine its contribution to a successful result in relation to other factors. Perhaps the best indication is the extent to which the people participate.

It was suggested that WHO might assist in the evaluation of health education, and act as a clearing-house to provide administrators with the experiences of others in such evaluation.

Training of health personnel in health education

Discussions on training centred around three major topics: health education training in the basic preparation of health personnel; continuing or in-service training in health education; and the responsibilities and training of the health education specialist.

There was complete agreement among the groups that all health workers—physicians, nurses, midwives, health visitors, social workers, engineers, sanitarians and their auxiliaries—have responsibility for the health education aspects of the services they render and of the programmes in which they participate.

In addition, it was recognized that teachers, recreation and youth workers, agricultural extension workers, fundamental education specialists, publicity and public information workers, community development workers, community leaders and others have an important contribution to make to the health education of the public.

Several of the discussion groups worked out in detail the training each category of personnel required to discharge this responsibility effectively. It was considered desirable that their training should equip them with: knowledge of how people learn (the problem of motivation and resistance in health matters); an understanding of the importance of traditions, habits, values, superstitions and the general way of life of any community, its power structure and leadership; a know-

ledge of methods of ascertaining such information; skill in the use of education methods and media; skill in human relations and teamwork.

There was general agreement that training in health education should be a regular part of the curricula of the various institutions responsible for the preparation of professional health workers. In several groups, it was pointed out that in some eastern European countries all public health physicians are required to take post-graduate training in health education. In their work as members of salaried medical services, they must then devote a certain number of hours to health education each month. In other countries, however, where doctors do not receive a salary, but earn their living by private practice, the trend is definitely towards a greater interest in clinical medicine, and medical training is geared towards this end. In these countries changes need to be introduced in the curricula of medical schools in order to arouse the interest of the students in preventive and social problems. Some encouraging local experiments were mentioned where students are assigned to a family or group of families in the community as medical observers rather than advisers. It was considered that such programmes should be encouraged so as to produce in the future medical practitioners concerned with public health and social problems who can co-operate in health education activities to a greater extent.

Unanimous agreement that training in health education should be given to all health personnel as part of basic professional preparation was accompanied by an equally unanimous recognition that this would not be easy to accomplish. Some of the obstacles mentioned were: the difficulty of trying to change long-standing educational traditions; the difficulty of trying to change the attitudes of teaching staff, particularly senior members of the faculty; the shortage of highly qualified health education specialists to do the teaching; shortage of funds; the possible prolongation of study time in an already overcrowded curriculum; the revision of curricula, a task which demands research and thorough analysis of existing programmes and future aims.

Continuing in-service training was considered by all groups to be vital to the development of effective health education. Such training is needed not only for newly prepared workers, but is especially required for older personnel who may have had no health education training in their basic professional preparation. The groups made various concrete suggestions: inclusion of provisions for in-service training in the budget and programme of health administrations; recruitment of an adequate qualified teaching staff; integration of health education into every further-training programme; publicizing successful seminars or similar meetings in order to increase the demand for in-service training in health education by health workers; keeping in touch with field workers through monthly newsletters or bulletins; provision of fellowships; careful selection of staff members to attend seminars so that they can share experiences and information with their fellow workers when they return; conduct of seminars and study groups in a manner that provides for the active participation of all members, rather than reliance on formal or didactic meetings.

It was pointed out that it is often better to provide training in the rural health centres than to bring staff to the urban areas where they are tempted to remain. Wherever possible, in-service training should be carried on in such a way that the health workers can all be lodged in common quarters. Such an opportunity for the informal sharing of experiences and frank discussions helps the health worker to improve in his profession and develop as a human being.

In one group a participant described a unique combination of academic and in-service training. A seminar was arranged in which students of an advanced health education course were able to discuss the content and methods of health education of the public with practising health workers of different disciplines in a different country from the one in which the course was held. This procedure stimulated the health workers to learn more about health education and gave the students experience in adapting

what they had been taught to conditions in a new country.

Health education seminars were suggested as a useful means of persuading administrators of the value of in-service training in this field. It was also suggested that WHO experts might be asked to start national health education training programmes, and to sponsor meetings of health education specialists and health administrators to bring them up to date on new techniques, methods, principles, etc.

It was generally agreed that there was need in every country for at least a limited number of health education specialists. One group felt that such personnel are needed at all levels of health organization though it was recognized that it would not always be practical or possible to use highly skilled staff at the local level. In general, it was considered that the health education specialist should be a highly qualified person, capable of working on equal terms with programme directors and administrators as an adviser or consultant.

The duties of the health education specialist were considered to be: assisting health staff and others to plan and carry out the health education side of their programmes; organizing and participating in health education training programmes; assisting with the selection, preparation, pretesting, distribution and utilization of appropriate teaching aids and health education materials; co-ordinating all health education activities in the health organization; enlisting the advice of anthropologists, sociologists, psychologists and psychiatrists whenever their special skills will contribute to more effective health education.

There was not complete agreement concerning the qualifications needed to perform adequately the duties of a health education specialist. Some participants thought that he should be a doctor in order to have higher status and greater influence with the authorities. Others concluded that he need not necessarily be medically qualified, and one group considered that if the health education specialist is to teach, medical training is wasted on him.

Despite this lack of agreement on the basic professional training required, all were agreed that the health educator needs a university education, or its equivalent, with a sound knowledge of the behavioural sciences and educational methods, including audio-visual techniques. He should have strong leadership ability, be genuinely interested in people and their problems, be warm and out-going, and want to make health education his vocation.

It was pointed out that most countries could anticipate having in the near future only a relatively few qualified health education specialists; consequently they should be carefully selected and their training well planned as a part of a long-range programme.

It was recommended that only experienced and mature health workers with some years of practical health education work in their own countries should be sent abroad for specialized training.

WHO was commended for its sponsorship of training in health education, and it was hoped that the number of trainees might be increased each year.

Organization and administration of services

There was complete agreement on the desirability of a health education unit at the national level to co-ordinate the work of health education throughout a country. A majority of the groups felt that this unit should be a part of the central health administration, though others were of the opinion that the task of co-ordination could be entrusted to private agencies working in co-operation with the official health administration. It was suggested that, in some countries, technical units of health education might be desirable in the official education agencies as well as in voluntary health agencies. While agreeing that there should be some type of health education unit in every country, the groups all pointed out that the great differences in culture, educational levels of the people, and financial resources made it necessary for each unit to study its own situation and develop the type

of administrative structure best suited to its own needs and problems.

The general services expected from the health education unit are: participation with other technical units in planning for and carrying out the health education aspects of health programmes; assistance with the organization and conduct of in-service training in health education for health workers, in the Ministry of Health and in related agencies; studies of the health education needs of the country or area served; promotion of co-ordination between similar services in other government departments (education, social affairs, and social insurance) and in voluntary and professional health organizations; direct co-operation on the school health programme with the department of education; planning and developing appropriate teaching aids and health education materials; conducting health education demonstrations for the improvement of methods and material.

Although the exact position of the health education unit in the organizational structure of the country would vary, it was the general consensus of opinion that the unit should be placed at an administrative level which would grant it enough executive authority to carry out its own activities and to establish working relationships with both the public health and curative medical services. It should have sufficient independence to be able to offer technical advice without the necessity of going through a multiplicity of administrative channels.

Most members felt that the central unit should act in an advisory capacity where there are health services at the provincial and local levels. A few expressed the view that local units should not enjoy too much autonomy, but should be executive organs carrying out field activities in accordance with an agreed policy.

The participants felt that, depending on the needs and resources of the country, the central unit should be staffed with health education specialists, doctors, teachers, information specialists and personnel specializing in the production of materials. Sociologists, cultural anthropologists and psychologists could also serve on the health education staff.

Most groups believed that the administrator should be a physician specializing in public health and having a comprehensive training in health education. It was pointed out that in some countries professional health education specialists—not necessarily doctors—have helped to raise health education activities to a highly satisfactory level.

Several groups discussed health education auxiliaries as members of the health education staff. But the term did not have the same meaning to all the groups. To some " auxiliary workers " referred to fully trained paramedical personnel, such as nurses and health inspectors; to others the term meant volunteers who participate in community health education efforts; and to still others it meant sub-professional workers with a limited amount of training in health education.

There was no agreement about the role of the sub-professional worker. One group felt that the use of such poorly prepared personnel was definitely inadvisable. The funds devoted to their employment could better be spent on paramedical personnel who could render services to the population and at the same time carry on health education. Others mentioned that in underdeveloped countries such workers could make contact with a large mass of the population who cannot be reached by the more specialized staff. All those who felt that informally trained personnel should be utilized stressed the need for the closest possible supervision and guidance of their activities by professionally qualified health education specialists. One group considered that, although all health workers should be encouraged to engage in health education in the course of their regular work, they ought also to be warned against dealing with matters outside their competence. The warning applies especially to those of sub-professional grades. This temptation is especially strong where, for example, the only representative of the health department to visit a village over long periods is the sanitarian or health education auxiliary, who may be regarded as a " doctor "

and asked for advice on many medical matters.

The question of maintaining staff morale was considered by only a few of the groups. Some of their suggestions in this connexion were as follows: regular staff meetings or conferences, both general and at each level of the service, should be held for the exchange of views and the solution of problems; the administrative staff should take an interest in the work of the health education specialist, have a thorough knowledge of what is being done in health education, and be willing to give constructive assistance with any problems that may arise; steps should be taken to see that the significance of health education is appreciated by the entire health department staff, and that the administrative structure is one in which the health education specialists and the rest of the staff can work harmoniously together.

The participants were all agreed that health education, like all other branches of public health work, seldom has enough funds for sufficiently intensive activities. In general it was felt that the central budget should provide for specialist health education services as well as for routine activities in this field. In the budgets of other divisions—e.g., those dealing with communicable diseases—provision should be made for the required additional educational services and materials. Where possible the central budget might be supplemented by provincial and local funds, or from private sources.

It was emphasized that if there is a separate appropriation for health education services, there must be close co-operation with the special technical divisions of the programme as regards the preparation of suitable educational material and the organization of other educational activities.

All groups mentioned the important role that voluntary health agencies play in health education of the public. One group stated: " Voluntary agencies are made up of individuals who, for one reason or another, have a greater interest and concern with a specific health problem than does the average person. Because of this specific interest, their action is frequently guided by their emotions. This often results in undue emphasis on one problem and duplications or omissions in other areas of public health. However, the important concept is that these voluntary agencies are resources that can be utilized to give strength to the health movement in a given country."

Tribute was also paid to the contribution of universities, of professional groups such as medical, nursing and pharmacists' associations, and of teachers, religious leaders, and others.

However, some groups stressed that before these agencies can make their full contribution to health education there must be co-ordination both in planning and in action. Otherwise conflict or duplication of effort will limit the effectiveness of their activities.

A variety of methods to achieve such co-ordination were described. In some countries, there is an association of voluntary agencies which works with the official health agency. In others, co-ordination is ensured by a national committee consisting of both official and non-official agencies. Where there is a centralized, highly organized administration for health education work, co-ordination is naturally one of its functions. Elsewhere effective co-ordination is achieved through the granting of subsidies by the central authority to assist the health education work of local and non-governmental agencies. When this is done the subsidizing authority must obviously satisfy itself that there is a reasonable measure of co-ordination before the grant is paid.

Regardless of the method of co-ordination the best results are achieved where good human relations exist and the agencies are more concerned with results than with prestige.

Several groups considered the unique role of the press, which sometimes expresses views that may be in conflict with the health authority. Two positive suggestions were made in this connexion. Health administrators might hold periodic conferences with the public and the press concerning developments in the health programme, and the press might be represented on national co-ordinating committees.

Studies and research

There was general agreement that research in the field of health education is of the utmost importance for the success of health programmes. It was pointed out that many programmes fail or are slow in developing because of factors that are still unknown, e.g., why people behave as they do, how man thinks of his own environment, the values in which he believes, and his aims and ultimate goals.

Some groups also mentioned the need for more adequate estimates of public knowledge on various health subjects as a prerequisite to health education. An example was cited of a study in a highly-developed country where it was found that 70% of a sample of schoolchildren aged between 14 and 15 did not know that pulmonary tuberculosis was a communicable disease. It had previously been assumed that this was a well-known fact.

The groups also discussed evaluation studies at some length. These include not only appraisal of the effectiveness of programmes, but also investigation of the reasons for any lack of success, or for failure of people to participate. One group pointed out that to make evaluation possible initial plans should include the collection of base-line data and a clear statement of the problem and goals. One of the members cited an example of continuous programme evaluation as practised in his country. A research team, consisting of a public health doctor, a social scientist and a health education specialist, moves into an area before the programme begins. They gather all the relevant information on the people, their customs, beliefs, knowledge and practices as standards of reference for the measurement of progress. They live in the area, measuring changes as the programme develops. This combination of research and programme development has proved extremely valuable.

The example was cited of a study to determine why people did not avail themselves of a chest X-ray for detecting tuberculosis, although no charge was made. Studies to determine the effectiveness of specific methods and materials were also mentioned. Such studies would perfect the tools of health education and lead to better results for the same amount of effort.

It was generally felt that the services of cultural anthropologists, psychologists and perhaps sociologists are needed to assist in much of the research work described. It was recognized, however, that research in the social sciences is expensive and cannot be undertaken in depth without adequate funds. One group suggested approaching university departments of anthropology, psychology or sociology for assistance in research of this type.

One group pointed out that while it is necessary to engage in research of such complexity that it requires social scientists to direct it, there are studies of a less advanced character that can be undertaken by the health workers themselves, once they are convinced of their importance. This group suggested that much information useful in programme planning can be gained by intelligent listening to the people rather than by always asking questions.

A warning about undertaking too extensive a study without expert research guidance came from one group, which cited the example of a large-scale survey on tuberculosis which was undertaken without the help of any social scientists. The result was most disappointing since most of the answers could not be used because the research has not been adequately planned.

The groups were sufficiently concerned about intensifying research in health education to suggest that WHO: encourage universities to do more research in the field of health education; prepare a document for the use of Member States, setting forth general guiding principles in research and containing suggestions on the types of studies needed; inform Member States of the results of research already done; initiate studies in school health and in the evaluation of public health education programmes; encourage Member States to establish committees on research, by making available research consultants (social anthropologists, psychologists and sociologists), providing special grants,

and by organizing special seminars on the subject; and utilize the International Medical Research and Health Year, if approved by the World Health Assembly, as an opportunity to carry out research programmes in health education.

FINAL PLENARY SESSION

The General Chairman opened the final plenary session by expressing his satisfaction with the useful contributions made by the participants in the group meetings. He invited comments on the draft summary of the eleven group reports.

In the general discussion, many of the points in the draft were singled out for special mention. These included: the importance of detailed, specific, yet flexible planning of the educational aspects of any health programme; the important role in health education of doctors, nurses, midwives, social workers, sanitarians, teachers and all others in frequent contact with the public; the need for basic preparation as well as in-service training in health education for all such workers if they are to discharge their role successfully; the progress being made in health education training of medical and paramedical personnel despite the difficulties involved; the need for a great increase in research efforts in health education; the task of WHO in providing leadership in health education research; the value of consulting social scientists and using their research findings in health education programmes.

The role of the health education specialist was reviewed, as well as his basic qualifications and training. Although some differences of opinion continued to exist among those who discussed this question, the basic functions as listed in the report of the WHO Expert Committee on Training of Health Personnel in Health Education of the Public [3] seemed satisfactory.

Tribute was paid to the technical discussions as an excellent means of sharing experiences and experiments in different countries. It was also pointed out that the freedom for exchange of views within the discussion groups had resulted in much mutual education and, in fact, demonstrated one method of health education.

In a brief statement one of the participants observed that health education was not a programme in the sense that control of a communicable disease was a programme; it was rather a method of public health whereby the knowledge and skill of the physician, engineer, nurse and other health workers could become more readily acceptable to people who could benefit from the services rendered by these workers. The real task of health education was to create an environment in which people could study their problems objectively and find solutions satisfying to them. Over the years through research and experience a body of health education knowledge and skills had been developed which those who engaged in health education should acquire through training. Without such knowledge and skills health workers risked obtaining results quite different from those they intended, for the tool of health education was as dangerous when used by individuals untrained in handling it as was the scalpel when used by an incompetent, poorly trained surgeon.

After expressing appreciation to all those who had contributed to the success of the technical discussions, the General Chairman closed the session by expressing the hope that this meeting was not the end but the starting point for intensified work in all Member States. There was, he said, no end to health education, which would continually grow and change as new discoveries were made.

[3] *Wld Hlth Org. techn. Rep. Ser.*, 1958, **156**, 14-15

Notes and News

Executive Board : twenty-fourth session

The WHO Executive Board held its twenty-fourth session in Geneva on 1 and 2 June 1959, following the Twelfth World Health Assembly. At the opening meeting, Professor E. J. Y. Aujaleu, Directeur général de la Santé publique au Ministère de la Santé publique et de la Population, France, was elected as Chairman, while Professor M. Etemadian (Iran) and Dr H. M. Penido (Brazil) were elected as Vice-Chairmen. Dr D. Castillo (Venezuela) and Dr A. J. Metcalfe (Australia) were elected as Rapporteurs.

The Board discussed a preliminary report on BCG vaccination programmes submitted by the Director-General in compliance with a resolution passed at the preceding session. The report was in two parts, the first dealing with the degree of protection against tuberculosis obtained by BCG vaccination, and the second giving statistical data on WHO/UNICEF-assisted programmes for the period 1951-1958. From Part I, which included reviews of the results of controlled trials in the United States and the United Kingdom, it appeared that BCG vaccination could give a considerable degree of protection to properly selected subjects. Part II showed that, between 1951 and 1958, WHO and UNICEF assisted the governments of 41 countries and territories, with a combined population of 785 million, in BCG vaccination campaigns. During these campaigns, approximately 234 million persons were tuberculin-tested and 88 million vaccinated. The Director-General was asked to present a further report on this subject to the next session of the Board.

Concerning the question of an International Health and Medical Research Year, which is to be reconsidered at the Thirteenth World Health Assembly (see page 292), the Board asked the Director-General to obtain suggestions on the subject from Member States and Associate Members, and to ask the regional committees to discuss it at their next sessions and submit any comments or suggestions they might wish to make. A report on the replies and suggestions received would then be submitted to the Executive Board at its next session.

The Board adopted rules for the international architectural competition to decide on plans for the new Headquarters building in Geneva (see page 294). A jury of seven architects will assist the Director-General in choosing the winning design. The first prize will be the award of the contract, the second Sw.fr. 25 000 and the third Sw.fr. 15 000.

The Director-General reported to the Executive Board that, as of 1 June, total contributions to the Malaria Eradication Special Account (see page 293) amounted to $8 644 000. The Board requested the Director-General to submit a further report on the status of the Account at its twenty-fifth session.

The Board decided that the subject of the technical discussions to be held at the Fourteenth World Health Assembly would be: "Recent advances in tuberculosis control".

The twenty-fifth session of the Executive Board will be held at the Palais des Nations, Geneva, commencing on 19 January 1960.

Allergenic potency of dried BCG vaccine

The superiority of dried BCG glutamate vaccine over dried BCG sucrose vaccine has repeatedly been demonstrated by Japanese research workers, who have for some time been seeking a BCG vaccine preparation which can be stored for a long period at relatively high temperatures without appreciable loss of allergenic potency.

In a recent article in the *Bulletin of the World Health Organization*,[1] Y. Obayashi and his co-workers give further proof of the superiority of the glutamate vaccine, based on a study of the degree of post-vaccinal allergy 4 and 12 months after vaccination, as determined by tests with Japanese Old Tuberculin (OT) and Danish purified tuberculin (PPD).

[1] *Bull. Wld Hlth Org.*, 1959, 20, 1165

After storage for one month at 5°C, 30°C, 38.5°C and 50°C, both types of dried vaccine were administered to schoolchildren. The allergenic potency of dried glutamate vaccine stored for a month at more than 30°C was consistently higher than that of dried sucrose vaccine. Only after one month's storage at 50°C did it show any significant decrease in potency.

The mean size of induration with PPD was greater after 12 months than after 4 months. This result was not in accordance with earlier studies, which had recorded weaker reactions at the second test. The divergency may be explained by the fact that, in the more recent experiments, the second injection of tuberculin was given at a different site from the first, and injections of tuberculin are known to be weaker in previously used sites than in new sites. It may also be that the second injection had a "boosting" effect; this possibility is still under study.

Research on drinking-water quality

WHO has recently issued a second mimeographed list of investigators engaged in research on drinking-water quality, containing the names of 136 investigators working on 165 subjects of study in 50 different laboratories or institutions in 34 countries. The first list, issued in December 1958, contained the names of 67 investigators.

The compilation of such lists was proposed by a WHO Study Group on International Standards for Drinking-Water, which met in Geneva in 1956 [1] and recommended 28 subjects for research. Part II of the list gives these subjects, together with the names of individuals working on research which can be classified under them, while Part I gives the names, in alphabetical order, of all investigators known to be working on water quality research, together with their titles and the names of the institutions at which they are working.

It is recognized that many names and items of study have probably been omitted from the list, and WHO would therefore appreciate further information, from all available sources, on research into drinking-water quality. Since the lists are intended to cover only research in progress, omitting the titles of work already published, the co-operation of the scientists concerned in keeping this information up to date would be greatly appreciated. Correspondence on the subject may be addressed to the Division of Environmental Sanitation, WHO Headquarters, Geneva, or to the appropriate regional office.

[1] For the standards recommended by the Group, see: World Health Organization (1958) *International standards for drinking-water*, Geneva.

Contamination of foodstuffs

The first WHO/FAO veterinary public health seminar to be held in Asia took place recently. It was attended by veterinarians and other interested public health staff from Australia, China (Taiwan) Fiji, Hong Kong, Japan, the Republic of Korea, the Federation of Malaya, New Zealand, the Philippines and Singapore. Consultants were present from Denmark, Pakistan, and the United States of America.

Among the topics discussed by the seminar was that of the radioactive contamination of foodstuffs. Japan is so far the only country in Asia where food is regularly inspected for radioactive contamination; with the rapid development and growing use of nuclear energy, similar inspection programmes may be needed in other countries. Fellowships in radiobiology are accordingly being provided to public health veterinarians by the International Atomic Energy Agency (IAEA), FAO and WHO.

Infections by micro-organisms of the *Salmonella* group were discussed; to date, almost 500 varieties of these organisms have been identified. Salmonelloses are the most frequent type of food poisoning, occurring not only in the developing countries, but also to an increasing extent in developed countries, such as Australia and New Zealand, where almost a third of the population now eat at least one meal a day in canteens, cafeterias and restaurants, and the consumption of mass-produced, "ready-to-serve" foods is growing. A recent survey showed that, of 200 outbreaks of salmonelloses associated with food, 5 came from fresh meat, 87 from processed meat, 41 from eggs (mainly ducks' eggs) and egg products, 23 from cream confectionery, 10 from milk, and 34 from other foods. The seminar recommended that cases

of suspected food poisoning be reported directly to a physician, and that public health authorities be equipped to deal immediately with any outbreaks. Other measures suggested were: improved national and international methods of reporting outbreaks, health education of persons handling food, and the special treatment of certain foodstuffs, such as eggs and fish, before they reach the consumer.

Travelling seminar on maternal and child health

A group of health administrators, obstetricians, paediatricians and nurses from 24 countries in Europe took part in a WHO-sponsored travelling seminar, held in Norway and Poland from 3 to 23 June. The participants spent ten days in each country, visiting health centres, maternity hospitals, children's hospitals, day nurseries, schools, and institutions for handicapped children. The purpose of the seminar was to study certain general maternal and child health problems existing in the European Region. The discussions, which were based on observations in the two countries visited, dealt mainly with questions of organization and administration, and with the co-ordination of the various maternal and child health services both with one another and with other health services.

Expert Committee on Cancer

Following a recommendation made by the WHO Study Group on Histological Definitions of Cancer Types which met in Oslo in 1957, WHO established an international reference centre for soft-tissue tumours at the Armed Forces Institute of Pathology, Washington, D.C., towards the end of 1958.

A WHO Expert Committee on Cancer met in Geneva from 22 to 27 June to study the classification and nomenclature of primary tumours of various tissues of mesenchymal origin such as fibrous tissue, muscle tissue, fat tissue, vascular tissue, etc., grouped under the arbitrary designation of "soft-tissue tumours". The Committee also discussed working principles and a programme for the international reference centre for soft-tissue tumours and groups associated with it.

An account of the Committee's work will appear in the Chronicle when its report is published.

The prevention of mental ill-health

From the opinions expressed at the various meetings and conferences on mental health held by WHO since 1949, it is clear that experts in this field are agreed on the special importance of prevention and, in particular, of detection of early signs of mental illness and treatment before incapacitating symptoms develop. At the same time, the mental hospital has been changing from a custodial institution to one in which patients are treated in freedom, while there is a growing tendency to follow up hospital treatment by out-patient care. Both preventive action and aftercare are increasingly being carried out through the public health services. These developments have given a new direction to the work of public health, social and educational services in many European communities.

A European Conference on Mental Health Practice was held by WHO, in conjunction with the Finnish Government, from 24 June to 3 July 1959 in Helsinki. It was attended by some 60 representatives of the professions of public health administration, psychiatry, paediatrics, nursing and general medicine from 26 European countries. Its purpose was to discuss modern procedures in preventive mental health work. Specific topics included: preventive mental health work with children and the aged; professional training in mental health for nurses and doctors; health education aspects of mental health; administration (i.e., the best means of pursuing mental health activities within the framework of existing services).

Milk hygiene

The first report of the Joint FAO/WHO Expert Committee on Milk Hygiene [1] concentrated on the hygiene of fluid milk and recommended that milk products such as butter, cheese and ice-cream should be considered at a later date. The Joint Committee therefore met, in Geneva, from 13 to 18 July 1959, to discuss the hygiene of such products, particularly in

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1957, **124**

warm countries. The Committee also reviewed recent developments relating to the hygiene of fluid milk, including the milk of buffaloes, sheep and goats.

An account of the Committee's work will appear in the Chronicle when its report is published.

Plague in 1958

A note on the incidence of plague in 1958, which appeared in the Chronicle for March 1959,[1] gave the number of reported cases in Burma as 18. According to revised data recently published in the WHO *Weekly Epidemiological Record* (No. 24, 1959), the number of cases in Burma was actually 76, which brings the total number of officially recorded cases of plague in 1958 up to 271. The figure for 1958 nevertheless remains the lowest for any year since the beginning of the century.

[1] WHO Chronicle, 1959, 13, 133

People and Places

Medical aspects of industrialization

New industries, particularly in the developing countries, attract a number of unskilled workers seeking higher wages. Very often, these workers are quite unaware of occupational risks and are therefore specially in need of health and safety education. Moreover, the new working populations established round industrial districts in the so-called "mushroom towns" frequently live under great stress and in extremely unhygienic conditions. In these circumstances, the problems of housing and town planning, maternal and child health, nutrition, mental health, control of communicable diseases, and the provision of medical care assume particular importance, and health authorities often have great difficulty in coping with the responsibilities involved.

Professor Richard Schilling has been asked by WHO to prepare a study on the medical aspects of industrialization, as the Organization's contribution to a survey on industrialization and productivity now being undertaken by the United Nations Bureau of Economic Affairs. Professor Schilling, who is Director of the Rockefeller Unit of Occupational Health at the London School of Hygiene and Tropical Medicine, has also served as Medical Inspector of Factories in the Ministry of Labour, London, and as Reader in Occupational Health at Manchester University.

Psychiatric aspects of juvenile delinquency

WHO's contribution to the Second International Congress on the Prevention of Crime and the Treatment of Offenders, which is to be held by the Economic and Social Council of the United Nations in 1960, will be a paper on "New forms of juvenile delinquency: their origin, prevention and treatment". This paper is being prepared by Dr T. C. N. Gibbens, Reader in Forensic Psychiatry at the Institute of Psychiatry of the Maudsley Hospital, London, England. Dr Gibbens, who has already assisted WHO on several occasions with the study of problems of crime and the treatment of offenders, will travel extensively in Europe and Asia in order to obtain first-hand knowledge of current problems of juvenile delinquency in various countries.

Sociology and health

Dr Jean Heisler, of France, has been appointed to advise the WHO Regional Office for Africa on the social, cultural and anthropological aspects of its health programmes. In this connexion, he will plan special surveys of populations in the Region, and help to train medical and health workers in social and cultural anthropology.

Born in Nantes in 1926, Dr Heisler is a graduate of the Faculty of Medicine of the University

of Paris, and has served for two years as sociologist in Dahomey.

Tuberculosis control in Malaya

Sir Harry Wunderly, former Director of the Division of Tuberculosis, Commonwealth Department of Health, Australia, has been appointed WHO consultant on tuberculosis control in the Federation of Malaya, with the task of surveying tuberculosis problems in the Federation and advising the Government on its plans for a control programme. A graduate of the Faculty of Medicine of the University of Melbourne, Sir Harry is President of the Association for the Prevention of Tuberculosis in Australia. In January and February of this year, he served as consultant in a WHO-sponsored tuberculosis refresher course held in Suva, Fiji, for assistant medical practitioners in South Pacific island territories.

New Area Representatives in the Western Pacific Region

A new WHO Area Representative's Office was opened in Taipeh, Taiwan (China) on 1 July; this is the fourth office of its kind in the Western Pacific Region, the others being in Sydney, Singapore and Saigon. Dr Donald Thomson has been appointed Area Representative in charge of the new office, which will cover Hong Kong, Japan, the Republic of Korea, Macau, the Pacific Trust Territories of the United States of America, and Taiwan (China).

Dr Thomson has served with WHO since January 1947, when he joined the Interim Commission of the Organization as tuberculosis consultant and chief of a mission to Greece. In 1950 he was appointed Tuberculosis Adviser for the Eastern Mediterranean Region, and in 1951 he was recalled to Geneva to organize WHO's BCG vaccination programme. He served for several years with the Tuberculosis Section at WHO Headquarters, and in 1955-1956 was in charge of the Organization's Tuberculosis Research Office in Copenhagen. Since then he has been WHO Medical Adviser to the UNICEF Asia Regional Office in Bangkok, Thailand. Dr Thomson studied medicine at the University of Geneva and carried out post-graduate studies at the London School of Hygiene and Tropical Medicine; in 1953 he obtained the Diploma of Public Health of the University of London.

Dr Lawrence O. Roberts has been appointed Area Representative for the South Pacific, at the area office in Sydney, Australia. The area includes Australia, New Zealand, Papua and New Guinea, Netherlands New Guinea and various island territories. Dr Roberts studied medicine at St Bartholomew's Hospital Medical College, London, and took a post-graduate degree in public health at Harvard University. He has served with WHO since 1950 and, before taking up his new appointment, was Tuberculosis Adviser to the Regional Office for the Western Pacific in Manila.

As Area Representatives, Dr Thomson and Dr Roberts will represent Dr I. C. Fang, Regional Director, in the co-ordination of health programmes in their respective areas and in negotiations with governments on technical and administrative matters concerning international health.

Education and health

" The main object of compulsory education is to ensure that children grow up with enough learning to carry on the ordinary affairs of life and to exercise their duties as citizens. Primary education is enough to meet the minimum requirements, and it is essential that health education should be introduced at this stage, because an understanding of health needs and activities is part of the equipment of every citizen. Children who reach the stage of receiving secondary education ought to have a much more elaborate concept of health, derived partly from specific teaching, but mainly from practical instruction through games and other outdoor activities and from more general teaching in such subjects as geography, nutrition, and the art of living together. At the higher levels of education, especially in the training of teachers and other professional workers, health instruction should be regarded as one of the required subjects. Every effort should be made to instruct students so that they may become teachers in health."

First Report on the World Health Situation: 1954-1956 (*Off. Rec. Wld Hlth Org.*, 1959, 94), Geneva, p. 8

Review of WHO Publications

Cholera, by R. Pollitzer (with two chapters written in collaboration with W. Burrows and S. Swaroop), Geneva, 1959 (*World Health Organization: Monograph Series*, No. 43), 1019 pages. Price: £5, $20.00, or Sw. fr. 60.—. French edition in preparation.

It would be no exaggeration to say that it was through cholera, and the fear to which its pandemic sweeps gave rise, that international solidarity in matters of health was born. Cholera was the principal disease covered by the early international sanitary conventions and came at the head of the list of quarantinable diseases. Koch's discovery of the cholera vibrio, and thus the confirmation of the contagion theory, in 1884 was a scientific keystone of the greatest importance and lay at the base of much progress in the drafting of future sanitary conventions. While in Europe cholera has not been seen since the early twentieth century, its endemic foci in Asia remain, occasionally erupting into epidemics. The disease continues to claim an annual toll of tens of thousands on that continent and to menace other parts of the world, as witnessed by the 1947 epidemic in Egypt from which the disease had been absent since 1919.

Much has been written on cholera in the past hundred years, but a great part of the work is scattered among the periodicals of the world and is often not easily accessible. Some of this work has proved to be of transitory importance; some, on the other hand, now fallen into neglect, merits inclusion in the history of medical discovery. Today research workers are still at grips with a number of problems, among them the immunological characteristics of the vibrio and their implications for cholera vaccine; differential bacteriological and biochemical diagnosis and phage typing; and a variety of practical questions of prevention and treatment depending on these.

To assist public health services responsible for cholera control in endemic areas and to provide guidance for those who may one day be faced with the problem in countries now free from the disease, the World Health Organization invited Dr R. Pollitzer to prepare a monograph on cholera. The eleven chapters which constitute the main part of this book originally appeared as separate articles in the *Bulletin of the World Health Organization* over a period of three years; they have now been revised and brought up to date in the light of comments received and new information made available during that period.

Dr Pollitzer writes with an authority derived from a long career devoted largely to the fight against cholera and plague. His monograph on the latter disease, published by WHO in 1954, is already recognized as a classic; the World Health Organization publishes the present work in the confident hope that it will receive the same acclaim.

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